Joshua A. **Taillon**

Materials Research Engineer · Characterization Expert · Data Scientist

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Current Appointment

National Institute of Standards and Technology — *Boulder, CO*

Materials Data Scientist · Office of Data and Informatics — *September 2018 - PRESENT*

Education

University of Maryland, College Park — *College Park, MD*

Ph.D./M.S. in Materials Science and Engineering · GPA: 3.964 — *August 2016/May 2014*

- Thesis: *Advanced analytical microscopy at the nanoscale: Applications in wide bandgap and solid oxide fuel cell materials*
- Advised by Prof. Lourdes Salamanca-Riba
- NSF Graduate Research Fellow

Cornell University — *Ithaca, NY*

B.S. in Materials Science and Engineering · GPA: 3.872 — *June 2011*

- Graduated *Magna cum laude* with departmental honors
- Minor in Applied Economics and Management
- Senior research thesis in computational materials science

Technical Skills

Scientific Programming	Python, JavaScript, R, MATLAB, OpenCV, GNU coreutils/Linux/Bash, Java, Mathematica, LaTeX, Git, Docker
Data Processing/Mining	Pandas, NumPy, SciPy, Statsmodels, SQL (PostgreSQL), Scrapy, BeautifulSoup, XML/XSLT
Data Presentation	Jupyter Notebooks, Django, Matplotlib, ggplot2, Seaborn, Plot.ly, Reveal.js, RShiny
Machine Learning	Scikit-learn, TensorFlow
Materials Characterization	Extensive experience with FIB (Ga^+/Xe^+), SEM, TEM, Nanotomography, EDS, EELS, XPS, EBSD, XRD, etc.
Specific Software Skills	*Microscopy*: HyperSpy, DigitalMicrograph, ImageJ, Avizo, etc.; *Crystallography*: VESTA, CrystalMaker, JMol; *Energy Simulation*: VASP, Gaussian, ELK, Quantum Espresso;
Presentation/Writing	9 peer-reviewed articles, 11 proceedings, over 40 presentations (9 invited) — 338 total citations; *h-index:* 7

Research Experience

National Institute of Standards and Technology — *Gaithersburg, MD*

NRC Postdoctoral Research Fellow · Materials Measurement Science Division — *October 2016 - PRESENT*

- Independently developed research proposal (accepted by the National Research Council) to explore the applications of compressive sensing during 3D SEM imaging and chemical analysis in the FIB-SEM in order to radically improve experimental throughput
- Innovated the use of beta process factor analysis to enhance interpretability of chemical EDS maps (using Matlab and Python)
- Quantified hyperspectral reconstruction quality using multiple image quality metrics (*e.g.* SNR, DIVINE, BRISQUE, etc.)
- Regularly contributed development efforts to open-source hyperspectral data analysis software (*i.e. HyperSpy*)
- Collaboration with Dr. Keana Scott

University of Maryland — *College Park, MD*

NSF Graduate Research Fellow · Department of Materials Science and Engineering — *July 2011 - August 2016*

- Research focused on development of electron and ion beam experimental and data processing methods to characterize various materials systems
- Frequently collaborated with outside groups to train students on experimental equipment and data analysis to solve materials challenges

Analytical microscopy characterization of interfacial states at the 4H-*SiC/ SiO_2 interface:*

- Formulated an EELS data processing pipeline for research group, transitioning from one-off GUI-based analyses to Jupyter notebooks, dramatically enhancing data visualization, readability, and reproducibility
- Used high resolution TEM and electron energy loss spectroscopy to investigate the effects of post-processing on SiC MOSFETs
- Discovered unique electronic states of silicon in nitric oxide annealed devices using unsupervised machine learning EELS analyses
- Developed oxide spin-etching process with monolayer sensitivity for XPS depth profiling
- Collaboration with the U.S. Army Research Laboratory, Auburn University, and Rutgers University

Three-dimensional nanotomographic characterization of solid oxide fuel cell cathode degradation:

- Established FIB-SEM 3D methods to reconstruct SOFC cathode microstructures, collecting and processing over 10 GB of image data per experiment
- Developed innovative image processing and microstructure quantification routines using *Python*, *MATLAB*, and *Avizo*
- Quantified changes in SOFC cathode structures as a function of H_2O, CO_2, and Cr-vapor exposure
- Wrote a Python library to compute uncertainty confidence intervals for SOFC findings using a sub-volume bootstrapping algorithm
- Software implementations were open-sourced to enhance scientific reproducibility (*Repository Link*)
- Collaboration with Prof. Eric Wachsman

Cornell University *Ithaca, NY*

Undergraduate Senior Thesis Research · Department of Materials Science and Engineering *August 2010 - May 2011*

- Developed computational materials structure search methods using distributed high performance computing resources
- Discovered novel crystal structure of barium using genetic algorithm search techniques and density functional theory calculations
- Processed over 200GB of computation output using custom bash scripts
- Created descriptive visualizations of high-pressure solution space using *gnuplot*
- Awarded for "Best Overall Thesis" and 1st place in Senior Thesis poster competition by departmental faculty
- Advised by Asst. Prof. Richard Hennig (now at University of Florida)

Honors

Fellowships & Grants

2021 - 2022	**Collaborating for Impact Now Program**, National Institute of Standards and Technology *Internal grant competition (∼$200k award – 6 awardees out of ∼100 applications)*	*Gaithersburg, MD*
2016 - 2018	**NRC Research Associateship**, National Research Council	*Gaithersburg, MD*
2013 - 2016	**Graduate Research Fellowship**, National Science Foundation	*College Park, MD*
2011 - 2016	**University Fellowship**, University of Maryland	*College Park, MD*
2010 - 2011	**MS&E Junior Fellowship**, Cornell University Department of Materials Science and Engineering	*Ithaca, NY*

Awards

Jul. 2021	**2021 Service and Support to MML Accolade**, NIST Materials Measurement Laboratory	*Boulder, CO*
Jul. 2020	**2020 MML Science Data Management and Capabilities Accolade**, NIST Materials Measurement Laboratory	*Boulder, CO*
Nov. 2016	**Graduate Student Award**, Materials Research Society Fall Meeting	*Boston, MA*
June 2015	**Materials Science Award**, University of Maryland ResearchFest	*College Park, MD*
June 2014	**Entrepreneurship Award**, University of Maryland NanoDay Competition	*College Park, MD*
Dec. 2013	**Outstanding Student Presentation**, Materials Research Society Fall Meeting	*Boston, MA*
May 2011	**First Place**, Cornell MS&E Senior Thesis Poster Competition	*Ithaca, NY*
May 2011	**Best Overall Thesis**, Cornell MS&E Senior Thesis Competition	*Ithaca, NY*

Research Interests

Computational Microscopy	Novel applications of FIB-SEM and TEM methodologies and data processing for advanced materials analysis, bridging the gap between advanced signal processing and materials microscopy
Compressive Sensing	Speeding data collection and reducing electron dose through intelligent signal acquisition strategies
Autonomous Metrology	Improving microscopy data collection rates and results through intelligent (and autonomous) determination of measurement parameters using active learning
Machine Learning for Materials	Utilizing unsupervised methods to discover hidden relationships in hyperspectral datasets
Open-source Development	Bringing advanced data analysis methods to the microscopy community through open-source software collaborations
Materials Research	Applying cutting edge characterization methodologies in a wide range of materials systems, including alternative energy, wide bandgap, and energy conversion materials

Teaching and Professional Experience

Cornell University *Ithaca, NY*

Undergraduate Teaching Assistant · Department of Computer Science *August 2008 - May 2011*

- Teaching Assistant for CS 1110: Introduction to Computing Using Java and CS 1130: Transition to Object Oriented Programming
- Led weekly laboratory sessions of thirty students
- Assisted students during weekly office hours, answering questions and administering quizzes
- Graded weekly assignments and communicated detailed student feedback for every submission
- Courses included engineering and liberal arts students, requiring effective communication across multiple disciplines

Amphenol PCD *Beverly, MA*

Industrial Engineering Co-op *Fall 2009; Summer 2010*

- Worked closely with the Industrial Engineering Manager to bring new industrial connector products to the market
- Led the design of a custom telecommunications connector, proposing designs and tweaking the product to meet the customer's needs
- Supervised manufacturing staff during the initial quantity production of the new product; designed manufacturing work instructions
- Designed 3D models and engineering drawings for industrial and military/aerospace product lines
- Supported the Industrial Marketing and Sales Manager as an engineering representative in customer interactions

Professional Affiliations

Microanalysis Society

Director (Executive Council) *2021-2023*

Microanalysis Society

Member *2015 - PRESENT*

Research Data Alliance

Member *2018 - PRESENT*

Publications

Research productivity

Summary statistics:

- 9 published peer-reviewed articles; 11 conference proceedings
- 9 invited presentations; 31 contributed presentations
- 338 unique citations; *h*-index: 7 (from Google Scholar)

Refereed Journal Articles

NexusLIMS: A Laboratory Information Management System for Shared-Use Electron Microscopy Facilities
Joshua A. Taillon, Thomas F. Bina, Raymond L. Plante, Marcus W. Newrock, Gretchen Greene, June W. Lau
Microscopy and Microanalysis, vol. 26, no. 3, pp. 511–527, 2021. DOI: 10.1017/S1431927621000222

Characterization of Zinc Carboxylates in an Oil Paint Test Panel
Christine Romano, Thomas Lam, G Asher Newsome, Joshua A. Taillon, Nicole Little, Jia-sun Tsang
Studies in Conservation, 2019. DOI: 10.1080/00393630.2019.1666467

Analysis of the electronic and chemical structure in boron and phosphorus passivated 4H-SiC/SiO_2 interfaces using HRTEM and STEM-EELS
Joshua A. Taillon, Christopher Klingshirn, Sarit Dhar, Tsvetanka S. Zheleva, Aivars J. Lelis, Lourdes G. Salamanca-Riba
Applied Physics Letters, 2018. DOI: 10.1063/1.5053595

Improving microstructural quantification in FIB/SEM nanotomography
Joshua A. Taillon, Christopher Pellegrinelli, Yilin Huang, Eric D. Wachsman, Lourdes G. Salamanca-Riba
Ultramicroscopy, vol. 184, pp. 24–38, 2018. DOI: 10.1016/j.ultramic.2017.07.017

Teaching an Old Material New Tricks: Easy and Inexpensive Focused Ion Beam (FIB) Sample Protection Using Conductive Polymers
Joshua A. Taillon, Valery Ray, Lourdes G. Salamanca-Riba
Microscopy and Microanalysis, vol. 23, no. 4, pp. 872–877, 2017. DOI: 10.1017/S143192761700054X

Near-Field Optical Properties of Fully Alloyed Noble Metal Nanoparticles
Chen Gong, Mariama Rebello Sousa Dias, Garrett C. Wessler, Joshua A. Taillon, Lourdes G. Salamanca-Riba, Marina S. Leite
Advanced Optical Materials, vol. 5, no. 1, p. 1600568, 2016. DOI: 10.1002/adom.201600568

Long-Term Cr Poisoning Effect on LSCF-GDC Composite Cathodes Sintered at Different Temperatures
Chunyan Xiong, Joshua A. Taillon, Christopher Pellegrinelli, Yi-Lin Huang, Lourdes G. Salamanca-Riba, Bo Chi, Li Jian, Jian Pu, Eric D. Wachsman
Journal of The Electrochemical Society, vol. 163, no. 9, F1091–F1099, 2016. DOI: 10.1149/2.0841609jes

Boron-doped few-walled carbon nanotubes: novel synthesis and properties
Colin Preston, Da Song, Joshua A. Taillon, John Cumings, Liangbing Hu
Nanotechnology, vol. 27, no. 44, p. 445601, 2016. DOI: 10.1088/0957-4484/27/44/445601

Systematic structural and chemical characterization of the transition layer at the interface of NO-annealed 4H-SiC/SiO_2 metal-oxide-semiconductor field-effect transistors
Joshua A. Taillon, Joon Hyuk Yang, Claude A. Ahyi, John Rozen, John R. Williams, Leonard C. Feldman, Tsvetanka S. Zheleva, Aivars J. Lelis, Lourdes G. Salamanca-Riba
Journal of Applied Physics, vol. 113, no. 4, p. 044517, 2013. DOI: 10.1063/1.4789924

Conference Proceedings

NexusLIMS: Leveraging Shared Microscopy Resources for Data Analysis with a Configurable Laboratory Information Management System
Joshua A. Taillon, Raymond L. Plante, Marcus W. Newrock, June W. Lau, Gretchen Greene
Microscopy and Microanalysis, vol. 26, no. S2, pp. 140–141, 2020. DOI: 10.1017/S143192762002331 40

Harvesting Microscopy Experimental Context with a Configurable Laboratory Information Management System
Joshua A. Taillon, Rachel F. Devers, Raymond L. Plante, Marcus W. Newrock, June W. Lau, Gretchen Greene
Microscopy and Microanalysis, vol. 25, no. S2, pp. 140–141, 2019. DOI: 10.1017/S1431927619001430

An Open Evaluation of Hyperspectral Unmixing Strategies for EDS Analysis
Joshua A. Taillon
Microscopy and Microanalysis, vol. 24, no. S1, pp. 752–753, 2018. DOI: 10.1017/S1431927618004257

Compressive Sensing Reconstruction for EDS Analysis
Joshua A. Taillon
Microscopy and Microanalysis, vol. 24, no. S1, pp. 486–487, 2018. DOI: 10.1017/S1431927618002921

Electron Microscopy (Big and Small) Data Analysis With the Open Source Software Package HyperSpy
Francisco Pena, Tomas Ostasevicius, Vidar Tonaas Fauske, Pierre Burdet, Petras Jokubauskas, Magnus Nord, Mike Sarahan, Eric Prestat, Duncan N. Johnstone, Joshua A. Taillon, al.
Microscopy and Microanalysis, vol. 23, no. S1, pp. 214–215, 2017. DOI: 10.1017/S1431927617001751

Three Dimensional Microstructural Characterization of Cathode Degradation in SOFCs Using FIB/SEM and TEM
Joshua A. Taillon, Christopher Pellegrinelli, Yilin Huang, Eric D. Wachsman, Lourdes G. Salamanca-Riba
Microscopy and Microanalysis, vol. 21, no. S3, pp. 2161–2162, 2015. DOI: 10.1017/S1431927615011587

Characterization of the Oxide-Semiconductor Interface in 4H-SiC/SiO_2 Structures using TEM and XPS
Joshua A. Taillon, Karen Gaskell, Gang Liu, Leonard C. Feldman, Sarit Dahr, Tsvetanka S. Zheleva, Aivars J. Lelis, Lourdes G. Salamanca-Riba
Microscopy and Microanalysis, vol. 21, no. S3, pp. 1537–1538, 2015.

Investigating the Relationship between Operating Conditions and SOFC Cathode Degradation
Christopher Pellegrinelli, Yi-Lin Huang, Joshua A. Taillon, Lourdes G. Salamanca-Riba, Eric D. Wachsman
ECS Transactions, vol. 68, no. 1, pp. 773–784, 2015. DOI: 10.1149/06801.0773ecst

A Study of SOFC Cathode Degradation in H_2O Environments
Christopher Pellegrinelli, Yi-Lin Huang, Joshua A. Taillon, Lourdes G. Salamanca-Riba, Eric D. Wachsman
ECS Transactions, vol. 64, no. 2, pp. 17–28, 2014. DOI: 10.1149/06402.0017ecst

Towards a fundamental understanding of the cathode degradation mechanisms
Eric D. Wachsman, Yi-Lin Huang, Christopher Pellegrinelli, Joshua A. Taillon, Lourdes G. Salamanca-Riba
ECS Transactions, vol. 61, no. 1, pp. 47–56, 2014. DOI: 10.1149/06101.0047ecst

Three Dimensional Microstructural Characterization of Cathode Degradation in SOFCs Using Focused Ion Beam and SEM
Joshua A. Taillon, Christopher Pellegrinelli, Yilin Huang, Eric D. Wachsman, Lourdes G. Salamanca-Riba
ECS Transactions, vol. 61, no. 1, pp. 109–120, 2014. DOI: 10.1149/06101.0109ecst

Other Publications

Characterization of Zinc Carboxylates in an Oil Paint Test Panel [dataset]
Christine Romano, Thomas Lam, G Asher Newsome, Joshua A. Taillon, Nicole Little, Jia-sun Tsang
NIST Public Data Repository, 2019. DOI: 10.18434/M32082

Advanced Analytical Microscopy at the Nanoscale: Applications in Wide Bandgap and Solid Oxide Fuel Cell Materials
Joshua A. Taillon
Ph.D. Thesis, 2016. DOI: 10.13016/m29806

Ab Initio Discovery of Novel Crystal Structure Stability in Barium and Sodium-Calcium Compounds under Pressure using DFT
Joshua A. Taillon, William W. Tipton, Richard G. Hennig
arXiv e-prints, 2012. arxiv: https://arxiv.org/abs/1207.3320

Presentations

Invited

Data Analysis in Materials Science
Joshua A. Taillon, Eric Prestat, Carter Francis, Håkon Wiik Ånes — *Virtual*
8-hour Sunday Short Course presented at the *2021 Microscopy and Microanalysis Meeting* — *Aug. 2021*

Data Analysis in Materials Science
Joshua A. Taillon, Eric Prestat, Duncan Johnstone, Magnus Nord, Katherine MacArthur — *Portland, OR*
8-hour Sunday Short Course presented at the *2019 Microscopy and Microanalysis Meeting* — *Aug. 2019*

Electron Microscopy in the Age of "*Big Data*"
Joshua A. Taillon — *Hamilton, ON, Canada*
Presented at the *2019 Canadian Center for Electron Microscopy Summer School* — *June 2019*

Applications of Compressive Sensing for EDS Analysis
Joshua A. Taillon — *Hamilton, ON, Canada*
Presented at the *2018 FIB/SEM User Group Meeting* — *May 2018*

An Introduction to HyperSpy: the Multi-dimensional Data Analysis Toolbox
Joshua A. Taillon, Andrew A. Herzing — *Gaithersburg, MD*
A tutorial presented at the *Tools for Electron Microscopists* session at NIST — *Apr. 2018*

Computational Frontiers in Microscopy and Microanalysis
Joshua A. Taillon — *Gaithersburg, MD*
Presented at *A Celebration of Microscopy and Microanalysis* — *Sept. 2017*

Compressed Sensing Applications in Microscopy and Microanalysis
Joshua A. Taillon — *Gaithersburg, MD*
Presented at the *NIST CS-Bio-Metrology Working Group Meeting* — *May 2017*

Analytical and Microstructural Microscopy Approaches for Materials Characterization
Joshua A. Taillon — *Adelphi, MD*
Presented at the *U.S. Army Research Laboratory Methodology Seminar Series* — *Dec. 2016*

Analytical Electron Microscopy of Interfacial States in 4H-SiC/SiO_2 MOS Devices
Joshua A. Taillon, *et al.* — *Boston, MA*
Presented for Graduate Student Award consideration at the *2016 Fall Materials Research Society Meeting* — *Nov. 2016*

Contributed

NexusLIMS: Leveraging Shared Microscopy Resources for Data Analysis with a Configurable Laboratory Information Management System
Joshua A. Taillon — *Virtual*
Presented at the *2020 Microscopy and Microanalysis Meeting* — *Aug. 2020*

Harvesting Microscopy Experimental Context with a Configurable Laboratory Information Management System
Joshua A. Taillon — *Portland, OR*
Presented at the *2019 Microscopy and Microanalysis Meeting* — *Aug. 2019*

Compressive Sensing Reconstruction for EDS Analysis
Joshua A. Taillon — *Baltimore, MD*
Presented at the *2018 Microscopy and Microanalysis Meeting* — *Aug. 2018*

An Open Evaluation of Hyperspectral Unmixing Strategies for EDS Analysis
Joshua A. Taillon — *Baltimore, MD*
Presented at the *2018 Microscopy and Microanalysis Meeting* — *Aug. 2018*

TEM-EELS Investigation of Boron and Phosphorus Passivated 4H-SiC/SiO_2 Interface Structures
Christopher Klingshirn, Joshua A. Taillon, *et al.* — *New Orleans, LA*
Presented at the *2017 March American Physical Society Meeting* — *Mar. 2017*

Quantifiable Comparative Evaluation of FIB/SEM Instruments
Valery Ray, Joshua A. Taillon, *et al.* — *Gaithersburg, MD*
Presented at the *2017 FIB/SEM User Group Meeting* — *Mar. 2017*

Analytical Electron Microscopy of Interfacial States in 4H-SiC/SiO_2 MOS Devices
Joshua A. Taillon, *et al.* — *Boston, MA*
Presented at the *2016 Fall Materials Research Society Meeting* — *Nov. 2016*

Advanced Analytical Microscopy at the Nanoscale: Applications in Wide Bandgap and Solid Oxide Fuel Cell Materials
Joshua A. Taillon — *College Park, MD*
Oral defense of Ph.D. Thesis — *July 2016*

Performance and Degradation of SOFC Cathodes at Reduced Temperature
Christopher Pellegrinelli, Joshua A. Taillon, *et al.* — *San Diego, CA*
Presented at the *2016 Spring Electrochemical Society Meeting* — *May 2016*

Revealing Hidden Interfacial States in NO Passivated 4H-SiC/SiO_2 Structures using TEM-EELS and XPS
Joshua A. Taillon, *et al.* — *Baltimore, MD*
Presented at the *2016 March American Physical Society Meeting* — *Mar. 2016*

Alloyed Noble Metal Nanoparticles with Tunable Optical Properties
Garrett C. Wessler, Joshua A. Taillon, *et al.* — *Baltimore, MD*
Presented at the *2016 March American Physical Society Meeting* — *Mar. 2016*

Probing the Nature of Interfacial States in NO Passivated 4H-SiC/SiO_2 Structures using TEM-EELS and XPS
Joshua A. Taillon, *et al.* — *Boston, MA*
Presented at the *2015 Fall Materials Research Society Meeting* — *Dec. 2015*

Tomographic and Hyperspectral Analysis of Porous Three-Dimensional Solid Oxide Fuel Cell Cathodes at Multiple Length Scales
Joshua A. Taillon, *et al.* — *Boston, MA*
Presented at the *2015 Fall Materials Research Society Meeting* — *Nov. 2015*

Characterization of the Oxide-Semiconductor Interface in 4H-SiC/SiO_2 MOS Structures Using TEM and XPS
Joshua A. Taillon, *et al.* — *College Park, MD*
Presented at the *10th Annual SiC MOS Program Review* — *Aug. 2015*

Characterization of the Oxide-Semiconductor Interface in 4H-SiC/SiO_2 Structures Using TEM and XPS
Joshua A. Taillon, *et al.* — *Portland, OR*
Presented at the *2015 Microscopy and Microanalysis Meeting* — *Aug. 2015*

Three Dimensional Microstructural Characterization of Cathode Degradation in SOFCs Using FIB/SEM and TEM
Joshua A. Taillon, *et al.* — *Portland, OR*
Presented at the *2015 Microscopy and Microanalysis Meeting* — *Aug. 2015*

Investigating the Relationship between Operating Conditions and SOFC Cathode Degradation
Christopher Pellegrinelli, Joshua A. Taillon, *et al.* — *Glasgow, Scotland*
Presented at the *2015 SOFC-XIV Electrochemical Society Conference on Electrochemical Energy Conversion and Storage* — *July 2015*

Three Dimensional Microstructural Characterization of SOFCs Using Focused Ion Beam and SEM
Joshua A. Taillon, *et al.* — *Laurel, MD*
Presented at the *2015 FIB/SEM User Group Meeting* — *Feb. 2015*

Characterization of the Oxide-Semiconductor Interface in 4H-SiC/SiO_2 Structures Using TEM and XPS
Joshua A. Taillon, *et al.* — *Boston, MA*
Presented at the *2014 Fall Materials Research Society Meeting* — *Dec. 2014*

Three Dimensional Microstructural Characterization of Cathode Degradation in SOFCs Using Focused Ion Beam and SEM
Joshua A. Taillon, *et al.* — *Boston, MA*
Presented at the *Americas Amira & Avizo User Group Meeting* — *Oct. 2014*

Characterization of the Oxide-Semiconductor Interface in 4H-SiC/SiO_2 Structures Using TEM and XPS
Joshua A. Taillon, *et al.* — *College Park, MD*
Presented at the *9th Annual SiC MOS Workshop* — *Aug. 2014*

Three Dimensional Microstructural Characterization of Cathode Degradation in SOFCs Using Focused Ion Beam and SEM
Joshua A. Taillon, *et al.* *Orlando, FL*
Presented at the *2014 Spring Electrochemical Society Meeting* *May 2014*

Characterization of the Oxide-Semiconductor Interface in NO, P, and N-plasma Passivated 4H-SiC/SiO_2 Structures Using TEM and XPS
Joshua A. Taillon, *et al.* *Boston, MA*
Presented at the *2013 Fall Materials Research Society Meeting* *Dec. 2013*

Characterization of the Oxide-Semiconductor Interface in NO, P, and N-plasma Passivated 4H-SiC/SiO_2 Structures Using TEM
Joshua A. Taillon, *et al.* *College Park, MD*
Presented at the *8th Annual SiC MOS Workshop* *Aug. 2013*

Characterization of the Oxide-Semiconductor Interface in NO, P, and N-Plasma Passivated 4H-SiC/SiO_2 Structures Using TEM
Joshua A. Taillon, *et al.* *South Bend, IN*
Presented at the *55th Electronic Materials Conference* *June 2013*

Characterization of the oxide-semiconductor transition layer in NO, P, and N-plasma passivated 4H-SiC/SiO_2 structures using transmission electron microscopy
Joshua A. Taillon, *et al.* *Baltimore, MD*
Presented at the *2013 March American Physical Society Meeting* *Mar. 2013*

Systematic Characterization of the SiC/SiO_2 Transition Layer in NO-Annealed MOSFETs
Joshua A. Taillon, *et al.* *Boston, MA*
Presented at the *2012 Fall Materials Research Society Meeting* *Nov. 2012*

Fabrication of ZnO Nanowire Arrays for Hybrid Photovoltaic Applications
Joshua A. Taillon, *et al.* *Boston, MA*
Poster presented at the *2012 Fall Materials Research Society Meeting* *Nov. 2012*

Systematic Characterization of the SiC/SiO_2 Transition Layer in NO-Annealed MOSFETs
Joshua A. Taillon, *et al.* *College Park, MD*
Presented at the *7th Annual SiC MOS Workshop* *Aug. 2012*

Fabrication of ZnO Nanowire Arrays for Hybrid Photovoltaic Applications
Lourdes Salamanca-Riba, Joshua A. Taillon, *et al.* *Boston, MA*
Presented at the *2012 Fall American Physical Society March Meeting* *Feb. 2012*

Ab Initio Discovery of Novel Crystal Structure Stability in Barium and Sodium-Calcium Compounds under Pressure using DFT
Joshua A. Taillon, *et al.* *Ithaca, NY*
Presented at the *2011 Cornell University Senior Research Thesis Symposium* *May 2011*