

Dr. Jordan Adam Hachtel - Curriculum Vitæ

PERSONAL DATA

PLACE OF BIRTH: Boulder, Colorado, USA
DATE OF BIRTH: September 23rd 1985
CURRENT ADDRESS: Knoxville, Tennessee, USA
EMAIL: hachtelja@ornl.gov

RESEARCH STATEMENT

I specialize in the use of scanning transmission electron microscopy (STEM) to study the optical and electronic behavior of structures and materials at the nanoscale. Primarily, I am working with the new monochromated aberration-corrected STEM to probe the infrared plasmon and phonon modes of nanoscale dielectric and metallic nanostructures, as well as the vibrational response of organic materials and other beam-sensitive samples. Recently, I have also been using pixelated STEM detectors to do atomic-resolution imaging of electric fields in materials using differential phase contrast. Additionally, I combine atomic resolution imaging with Python-based numerical analysis to quantitatively study 2D-alloys and heterostructures, and utilize cathodoluminescence to study the localized response and photon statistics of emitters and nanostructures used for quantum information sciences.

APPOINTMENTS HELD

OCT 2016 - <i>Current</i>	OAK RIDGE NATIONAL LABORATORY <i>Postdoctoral Research Associate</i> Works under Juan Carlos Idrobo using state-of-the-art aberration-corrected electron microscopy to study the effects of optical orbital angular momentum directly at near field and perform precision characterization of magnetic, plasmonic, and two-dimensional materials.
JAN 2012 - OCT 2016	VANDERBILT UNIVERSITY and OAK RIDGE NATIONAL LABORATORY <i>Graduate Research Assistant</i> Conducted both theoretical and experimental investigations complex optical nanostructures, specializing in advanced applications of electron microscopy techniques such as cathodoluminescence and electron energy loss spectroscopy.
AUG 2011 - MAY 2012	VANDERBILT UNIVERSITY <i>Graduate Teaching Assistant</i> Conducted weekly recitation/lab for undergraduate experimental physics course. Lectured on electricity and magnetism topics and assisted students to perform experiments, troubleshoot issues, analyze data, and documenting results.
MAY 2006 - MAY 2008	UNIVERSITY OF COLORADO AT BOULDER <i>Undergraduate Research Assistant</i> Performed high-energy B-meson decay analysis on large datasets (10^8 events), as well as documenting and disseminating findings amongst large-scale collaboration (600+ Scientists)

EDUCATION

DEC 2016	Doctor of Philosophy in PHYSICS, <i>Vanderbilt University</i> Thesis: "The Nanoscale Optical Properties of Complex Nanostructures" Advisor: Prof. Sokrates T. Pantelides GPA: 3.97/4.00
MAY 2008	Bachelor of Arts in PHYSICS, <i>University of Colorado at Boulder</i> Bachelor of Science in APPLIED MATHEMATICS, <i>University of Colorado at Boulder</i>

TECHNICAL SKILLS

Electron Microscopy: Aberration-corrected atomic resolution imaging and spectroscopy
Monochromated electron energy loss spectroscopy
Differential phase contrast imaging and analysis
Cathodoluminescence spectroscopy and photon statistics
Fabrication: Focused Ion Beam, Lithography: (E-Beam, Optical), Thin Film Deposition
Computational: Python, VASP, Lumerical Solutions, Unix, L^AT_EX

AWARDS, GRANTS, AND HONORS

2018 | Microscopy Society of America Postdoctoral Research Award
2017 | Springer Publishing PhD Thesis Award
2015 | Microscopy & Microanalysis 2015 Presidential Scholar Award
Best Oral Presentation at 2015 TN-SCORE Annual Conference
2012-13 | Research Awards from Vanderbilt University Summer Stipend Program
2008 | Dean's List for Spring Semester in College of Arts and Sciences at University of Colorado
2007-08 | Dean's List in College of Engineering at University of Colorado
2006-08 | Undergraduate Research Grants awarded from Undergraduate Research Opportunity Program within the National Science Foundation
2005 | Honorable Mention: Mathematical Contest in Modeling

PROFESSIONAL ACTIVITIES

AUG 2015 - **Current** | Member of the Materials Research Society
FEB 2013 - **Current** | Member of the American Physical Society
JAN 2012 - MAY 2013 | Team Leader for Vanderbilt Students Volunteer for Science
AUG 2004 - DEC 2007 | Member of the Society of Physics Students at University of Colorado

ADVISORS AND COLLABORATORS

<i>Oak Ridge National Laboratory</i>	Dr. Juan Carlos Idrobo (Postdoctoral Advisor), Dr. Miaofang Chi, Dr. Karren More, Dr. Kai Xiao Dr. Andrew Lupini, Dr. Benjamin Lawrie, Dr. Raphael Pooser, Dr. Philip Evans, Dr. Eugene Dumitrescu, Dr. Matthew Chisholm, Dr. Ivan Kravchenko, Dr. Scott Retterer, Dr. Bernadeta Srijanto, Dr. Dale Hensley, Dr. Chad Parish, Dr. Donovan Leonard, Dr. Anas Mouti, Dr. Roderick Davidson
<i>Vanderbilt University</i>	Prof. Sokrates Pantelides (Ph.D. Advisor), <i>Prof. Richard Haglund</i> (Ph.D. Committee Member), <i>Prof. Kalman Varga</i> (Ph.D. Committee Member), Prof. Joshua Caldwell, Prof. Ronald Schrimpf, Prof. Daniel Fleetwood, Prof. Robert Reed, Prof. Norman Tolk, Dr. John Brehm, Dr. Yevegniy Puzyrev, Dr. En Xia Zhang, Dr. Cher Xuan, Zhang, Dr. Bo Choi, Dr. Michael Alles, Dr. Guo Xing Duan, Dr. Liang Wang, Dr. Daniel Mayo, Dr. Kai Ni, Ms. Claire Marvinney, Mr. Oleg Ovchinnikov, Mr. Matthew Feldman
<i>University of Tennessee at Knoxville</i>	<i>Prof. Gerd Duscher</i> (Ph.D. Committee Member), Prof. Ramki Kalyanaraman, Prof. Phillip Rack, Dr. Yueying Wu, Dr. Carlos Gonzalez, Dr. Ondrej Dyck, Dr. Abhinav Malasi, Ms. Shaofang Fu
<i>University of Colorado at Boulder</i>	Prof. James Smith (Undergraduate Advisor), Prof. William Ford (Undergraduate Advisor), Dr. Frederick Blanc, Dr. James Hirschauer, Dr. Keith Ulmer, Dr. Arik Kreisel, Mr. Zachary Clifton, Mr. Joe Becker
<i>Rice University</i>	Prof. Pulickel Ajayan, Prof. Boris Yakobson, Dr. Chandra Tiwary, Dr. Vidya Kochat, Dr. Alex Kutana, Mr. Amey Apte, Ms. Sandhya Susarla
<i>ICMAB-CSIC</i>	Prof. Anna Roig, Prof. Jaume Gázquez, Dr. Anna Laromaine, Dr. Marti Gich, Dr. Siming Yu
<i>imec</i>	Dr. Jérôme Mitard, Dr. Dimitri Linten, Dr. Nadine Collaert, Dr. Jacopo Franco, Dr. Liesbeth Witers
<i>University of Texas at Austin</i>	Prof. Delia Milliron, Dr. Ankit Agrawal, Mr. Shin Hum Cho, Ms. Lauren Gilbert
<i>Memphis University</i>	Prof. Xiao Shen, Prof. Jingbao Cui, Prof. Thang B. Hoang
<i>Washington University at St. Louis</i>	Prof. Rohan Mishra, Mr. Arashdeep Thind
<i>University of Illinois at Chicago</i>	Prof. Robert F. Klie, Dr. Jacob Jokisaari
<i>Uppsala University</i>	Prof. Jan Ruzs, Mr. Jakob Spiegelberg
<i>National University of Singapore</i>	<i>Prof. Stephen J. Pennycook</i> (Ph.D. Committee Member)
<i>Army Research Office</i>	Dr. Ritesh Sachan
<i>Fisk University</i>	Prof. Richard Mu

- In Press* S. Susarla, P. Manimunda, Y.M. Jaques, **J.A. Hachtel**, J.C. Idrobo, S.A.S. Amanulla, D.S. Galvão, C.S. Tiwary, P.M. Ajayan **Deformation Mechanisms of Vertically Stacked WS₂/MoS₂ Heterostructures: The Role of Interfaces.** *ACS Nano*
- A. Apte, V. Kochat, P. Rajak, A. Krishnamoorthy, P. Manimunda, **J.A. Hachtel**, J.C. Idrobo, S.A.S. Amanulla, P. Vashishta, A. Nakano, R.K. Kalia, C.S. Tiwary, P.M. Ajayan **Structural Phase Transformation in Strained Monolayer MoWSe₂ Alloy.** *ACS Nano*
- J.A. Hachtel**, A.R. Lupini, J.C. Idrobo **Exploring the capabilities of monochromated electron energy loss spectroscopy in the infrared regime.** *Sci. Rep.* **8**, 5637
- 2018 M.A. Feldman, E.F. Dumitrescu, D. Bridges, M.F. Chisholm, R.B. Davidson II, P.G. Evans, **J.A. Hachtel**, . Hu, R.C. Pooser, R.F. Haglund, B.J. Lawrie **Colossal photon bunching in quasiparticle-mediated nanodiamond cathodoluminescence.** *Phys. Rev. B* **29** 081404
- J.A. Hachtel**, R.B. Davidson II, E.R. Kovalik, S.T. Retterer, A.R. Lupini, R.F. Haglund, B.J. Lawrie, S.T. Pantelides **Polarization- and wavelength-resolved near-field imaging of complex plasmonic modes in Archimedean nanospirals.** *Opt. Lett.* **43**, 927
- V. Kochat, A. Apte, **J.A. Hachtel**, H. Kumazoe, A. Krishnamoorthy, S. Susarla, J.C. Idrobo, F. Shimojo, P. Vashishta, R. Kalia, A. Nakano, C.S. Tiwary, P.M. Ajayan **Re Doping in 2D Transition Metal Dichalcogenides as a New Route to Tailor Structural Phases and Induced Magnetism.** *Adv. Mater.* **29** 1703754
- Y.S. Puzyrev, X. Shen, C.X. Zhang, **J.A. Hachtel**, K. Ni, B.K. Choi, E.X. Zhang, O. Ovchinnikov, R.D. Schrimpf, D.M. Fleetwood, S.T. Pantelides **Memristive devices from ZnO nanowire bundles and meshes.** *App. Phys. Lett.* **111** 153504
- 2017 S. Susarla[†], A. Kutana[†], **J.A. Hachtel**[†], V. Kochat, A. Apte, R. Vajtai, J.C. Idrobo, B.I. Yakobson, C.S. Tiwary, P.M. Ajayan **Quaternary 2D Transition Metal Dichalcogenides (TMDs) with Tunable Bandgap.** *Adv. Mater.* **29** 1702457
- S. Susarla, V. Kochat, A. Kutana, **J.A. Hachtel**, J.C. Idrobo, R. Vajtai, B.I. Yakobson, C.S. Tiwary, P.M. Ajayan **Phase Segregation Behavior of Two-Dimensional Transition Metal Dichalcogenide Binary Alloys Induced by Dissimilar Substitution.** *Chem. Mater.* **29**, 7431
- E.X. Zhang, D.M. Fleetwood, **J.A. Hachtel**, C. Liang, R.A. Reed, M.L. Alles, R.D. Schrimpf, D. Linten, J. Mitard, M.F. Chisholm, S.T. Pantelides. **Total ionizing dose effects on Ge pMOS FinFETs on bulk Si.** *IEEE Trans. Nucl. Sci.* **64**, 226
- G.X. Duan, **J.A. Hachtel**, E.X. Zhang, C.X. Zhang, D.M. Fleetwood, R.A. Reed, D. Linten, J. Mitard, M.F. Chisholm, S.T. Pantelides. **Effects of negative-bias-temperature-instability on low frequency noise in SiGe pMOSFETs.** *IEEE Trans. Device Mater. Rel.* **16**, 541
- 2016 **J.A. Hachtel**, S. Yu, A.R. Lupini, S.T. Pantelides, M. Gich, A. Laromaine, A. Roig. **Gold nanotriangles decorated with superparamagnetic iron oxide nanoparticles: a compositional and microstructural study.** *Faraday Discussions* **191**, 215
- J.A. Hachtel**, C. Marvinney, A. Mouti, D.C. Mayo, R. Mu, S.J. Pennycook, A.R. Lupini, M.F. Chisholm, R.F. Haglund, S.T. Pantelides. **Probing plasmons in three dimensions by combining complementary spectroscopies in an scanning transmission electron microscope.** *Nanotechnology* **27**, 155202

[†]Equal Contributor

PEER-REVIEWED JOURNAL ARTICLES CONTINUED...

- L. Wang, E.X. Zhang, R.D. Schrimpf, G.X. Duan, **J.A. Hachtel**, D.M. Fleetwood, R.A. Reed, M.L. Alles, S.T. Pantelides, G. Bersuker, C.D. Young. **Total Ionizing Dose Effects on Ge Channel p FETs with Raised Si_{0.55}Ge_{0.45} Source/Drain.** *IEEE Trans. Nucl. Sci.* **62**, 2412
- S. Yu, **J.A. Hachtel**, M.F. Chisholm, S.T. Pantelides, A. Laromaine, A. Roig. **Magnetic gold nanotriangles by microwave-assisted polyol synthesis.** *Nanoscale* **7**, 14039
- 2015 G.X. Duan, **J. Hachtel**, X. Shen, E.X. Zhang, C.X. Zhang, B.R. Tuttle, D.M. Fleetwood, R.D. Schrimpf, R.A. Reed, J. Franco, D. Linten, J. Mitard, L. Witters, N. Collaert, M.F. Chisholm, S.T. Pantelides. **Activation Energies for Oxide- and Interface-Trap Charge Generation Due to Negative-Bias Temperature Stress of Si-Capped SiGe- p MOSFETs.** *IEEE Trans. Device Mater. Rel.* **15**, 352
- J.A. Hachtel**, R. Sachan, R. Mishra, S.T. Pantelides. **Quantitative first-principles theory of interface absorption effects in multilayer heterostructures.** *App. Phys. Lett.* **107**, 091908
- 2014 G.X. Duan, C.X. Zhang, E.X. Zhang, **J. Hachtel**, D.M. Fleetwood, R.D. Schrimpf, R.A. Reed, M.L. Alles, S.T. Pantelides, G. Bersuker, C.D. Young. **Bias Dependence of Total Ionizing Dose Effects in SiGe-SiO₂/HfO₂ MOS FinFETs.** *IEEE Trans. Nucl. Sci.* **61**, 2834
- A.J. Bevan et al., **The Physics of B Factories.** *Eur. Phys. J. C* **74**, 1
- 2013 B. Aubert et al., **The BaBar detector: Upgrades, operation, and performance.** *Nuclear Instruments and Methods in Physics Research A: Accelerators, Spectrometers, Detectors, and Associated Equipment* **729**, 615
- 2008 B. Aubert et al., **Observation of $\eta\rho^+$ and search for B^0 decays to $\eta'\eta$, $\eta\pi^0$, $\eta'\pi^0$, and $\omega\pi^0$.** *Phys. Rev. D* **78**, 011107(R)
- 2007 B. Aubert et al., **Search for Neutral B -Meson Decays to $a_0\pi$, a_0K , $\eta\rho^0$, and ηf^0 .** *Phys. Rev. D* **75**, 11102(R)

PEER-REVIEWED CONFERENCE PROCEEDINGS

- M.A. Feldman, R.B. Davidson II, **J.A. Hachtel**, E.F. Dumitrescu, R. Pooser, A. Hu, D. Bridges, P.G. Evans, R.F. Haglund, B.J. Lawrie **Colossal Bunching in Nanodiamond Cathodoluminescence.** *FiO: 2017 OSA Technical Digest*, paper JW3A.1
- J.A. Hachtel**, S.Y. Cho, R.B. Davidson II, M.F. Chisholm, J.C. Idrobo, R.F. Haglund, S.T. Pantelides, B.J. Lawrie **Observing Nanoscale Orbital Angular Momentum in Plasmon Vortices with Cathodoluminescence.** *Microscopy and Microanalysis* **23 (Suppl. 1)**, 1694
- 2017 **J.A. Hachtel**, R.B. Davidson II, R.F. Haglund, S.T. Pantelides, B.J. Lawrie, J.C. Idrobo **Near-Field Mid-Infrared Plasmonics in Complex Nanostructures with Monochromated Electron Energy Loss Spectroscopy.** *Microscopy and Microanalysis* **23 (Suppl. 1)** 1532
- J.A. Hachtel**, S. Susarla, V. Kochat, C.S. Tiwary, P.M. Ajayan, J.C. Idrobo **Directly Identifying Phase Segregation in 2D Quaternary Alloys.** *Microscopy and Microanalysis* **23 (Suppl. 1)** 1438
- J.A. Hachtel**, R.B. Davidson II, M.F. Chisholm, R.F. Haglund, S.T. Pantelides, S.Y. Cho, B.J. Lawrie **Nano-chirality detection with vortex plasmon modes.** *CLEO: 2017 OSA Technical Digest*, paper FM3H.5

PEER-REVIEWED CONFERENCE PROCEEDINGS CONTINUED...

- 2016 | **J.A. Hachtel**, R.B. Davidson II, M.F. Chisholm, B.J. Lawrie, R.F. Haglund, S.T. Pantelides
Unveiling Complex Plasmonic Resonances in Archimedean Nanospirals through Cathodoluminescence in a Scanning Transmission Electron Microscope. *Microscopy and Microanalysis* **22 (Suppl. 3)**, 266
- 2015 | **J.A. Hachtel**, A. Mouti, D.C. Mayo, C.E. Marvinney, R. Mu, S.J. Pennycook, A.R. Lupini, M.F. Chisholm, R.F. Haglund, S.T. Pantelides. **Probing Plasmons in Three Dimensions within Random Morphology Nanostructures.** *Microscopy and Microanalysis* **21 (Suppl. 3)**, 1683
- 2015 | **J.A. Hachtel**, D.C. Mayo, C.E. Marvinney, A. Mouti, R. Mu, S.J. Pennycook, A.R. Lupini, M.F. Chisholm, R.F. Haglund, S.T. Pantelides. **Direct Observation of Plasmonic Enhancement of Emission in Ag-nanoparticle-decorated ZnO Nanostructures.** *Microscopy and Microanalysis* **21 (Suppl. 3)**, 2389
- 2015 | **J.A. Hachtel**, D.C. Mayo, A. Mouti, C.E. Marvinney, R. Mu, S.J. Pennycook, A.R. Lupini, M.F. Chisholm, R.F. Haglund, S.T. Pantelides. **Spatially-Resolved, Three-Dimensional Investigation of Surface Plasmon Resonances in Complex Nanostructures.** *CLEO: 2015 OSA Technical Digest*, paper FThE.5

INVITED SEMINARS

- 2017 | **J.A. Hachtel.** **Advanced electron microscopy techniques for nanoscale analysis of complex optical phenomena.** *University of Memphis: Department of Physics.* Memphis, Tennessee, USA. January 27th
- 2016 | **J.A. Hachtel.** **Understanding the Nanoscale Optical Response of Complex Structures.** *Oak Ridge National Laboratory: Center for Nanophase Materials Sciences.* Oak Ridge, Tennessee, USA. June 14th

INVITED ORAL PRESENTATIONS

- 2015 | **J.A. Hachtel**, C.E. Marvinney, R. Mishra, A. Mouti, D.C. Mayo, R. Mu, S.J. Pennycook, A.R. Lupini, M.F. Chisholm, R.F. Haglund, S.T. Pantelides. **Understanding the Nanoscale Response of Complex Optical Structures.** *16th Annual Nanoscience and Nanotechnology Forum.* Nashville, Tennessee, USA. October 14th
- 2014 | **J.A. Hachtel**, A. Mouti, D.C. Mayo, C.E. Marvinney, R. Mu, S.J. Pennycook, M.F. Chisholm, R.F. Haglund, S.T. Pantelides. **Probing emission and plasmons in nanostructures in STEM through combined spectroscopies.** *8^{1st} Annual SESAPS Meeting.* Columbia, South Carolina, USA. November 14th

INVITED POSTER PRESENTATIONS

- 2015 | **J.A. Hachtel**, C.E. Marvinney, A. Mouti, D.C. Mayo, R. Mu, S.J. Pennycook, A.R. Lupini, M.F. Chisholm, R.F. Haglund, S.T. Pantelides. **Probing Plasmons in Three Dimensions Through Complementary Spectroscopies.** *Microscopy & Microanalysis 2015 Meeting.* Portland, Oregon, USA. August 5th

CONTRIBUTED ORAL PRESENTATIONS

- 2018 | **J.A. Hachtel**, D. Ratchford, N. Basim, J. Caldwell, J.C. Idrobo **Unveiling Surface Phonon Polaritons in Complex Nanostructures with Monochromated EELS.** *2018 MRS Spring Meeting & Exhibit.* Phoenix, AZ, USA. April 4th

CONTRIBUTED ORAL PRESENTATIONS CONTINUED...

- 2018 | **J.A. Hachtel**, J.C. Idrobo, M. Chi **Revealing Light Atoms with Electron Differential Phase Contrast on a Universal Detector**. *2018 MRS Spring Meeting & Exhibit*. Phoenix, AZ, USA. April 4th
- J.A. Hachtel**, S.Y. Cho, R.B. Davidson II, M.F. Chisholm, J.C. Idrobo, R.F. Haglund, S.T. Pantelides, B.J. Lawrie **Observing Nanoscale Orbital Angular Momentum in Plasmon Vortices with Cathodoluminescence**. *Microscopy and Microanalysis 2017* St. Louis, Missouri, USA. August 8th
- J.A. Hachtel**, R.B. Davidson II, R.F. Haglund, S.T. Pantelides, B.J. Lawrie, J.C. Idrobo **Near-Field Mid-Infrared Plasmonics in Complex Nanostructures with Monochromated Electron Energy Loss Spectroscopy**. *Microscopy and Microanalysis 2017* St. Louis, Missouri, USA. August 9th
- 2017 | **J.A. Hachtel**, S. Susarla, V. Kochat, C.S. Tiwary, P.M. Ajayan, J.C. Idrobo **Directly Identifying Phase Segregation in 2D Quaternary Alloys**. *Microscopy and Microanalysis 2017* St. Louis, Missouri, USA. August 9th
- J.A. Hachtel**, S.Y. Cho, R.B. Davidson II, M.F. Chisholm, R.F. Haglund, S.T. Pantelides, B.J. Lawrie, J.C. Idrobo **Near-Field Detection and Application of Optical Orbital Angular Momentum in the Electron Microscope**. *2017 MRS Spring Meeting & Exhibit*. Phoenix, AZ, USA. April 21st
- J.A. Hachtel** **Finding, Labelling, and Analyzing Atoms Simply with Python**. *Nion Swift Workshop III*. Bad Mittendorf, Austria. March 10th
- 2016 | **J.A. Hachtel**, R.B. Davidson II, M.F. Chisholm, B.J. Lawrie, R.F. Haglund, S.T. Pantelides **Unveiling Complex Plasmonic Resonances in Archimedean Nanospirals through Cathodoluminescence in a Scanning Transmission Electron Microscope**. *Microscopy & Microanalysis 2016*. Columbus, Ohio, USA. July 26th
- J.A. Hachtel**, R.B. Davidson II, A.R. Lupini, B.J. Lawrie, R.F. Haglund, S.T. Pantelides. **Complex Near-Field Plasmonic Response of Au Nanospirals**. *APS March Meeting 2016*. Baltimore, Maryland, USA. March 14th
- J.A. Hachtel**, C.E. Marvinney, A. Mouti, D.C. Mayo, R. Mu, S.J. Pennycook, A.R. Lupini, M.F. Chisholm, R.F. Haglund, S.T. Pantelides. **Probing plasmons in three-dimensions through combined spectroscopies in the electron microscope**. *2015 MRS Fall Meeting & Exhibit*. Boston, Massachusetts, USA. December 2nd
- J.A. Hachtel**, D.C. Mayo, C.E. Marvinney, R. Mu, S.J. Pennycook, M.F. Chisholm, R.F. Haglund, S.T. Pantelides. **Direct Observation of Plasmonic Enhancement of Emission in Ag-nanoparticle-decorated ZnO Nanostructures**. *Microscopy & Microanalysis 2015*. Portland, Oregon, USA. August 6th
- 2015 | **J.A. Hachtel**, C.E. Marvinney, R. Mishra, A. Mouti, D.C. Mayo, R. Mu, S.J. Pennycook, A.R. Lupini, M.F. Chisholm, R.F. Haglund, S.T. Pantelides. **Understanding Optical Phenomena at the Nanoscale**. *2015 TN-SCORE Annual Conference*. Nashville, Tennessee, USA. June 19th
- J.A. Hachtel**, A. Mouti, D.C. Mayo, C.E. Marvinney, R. Mu, S.J. Pennycook, M.F. Chisholm, R.F. Haglund, S.T. Pantelides. **Spatially-Resolved, Three-Dimensional Investigation of Surface Plasmon Resonances in Complex Nanostructures**. *CLEO: 2015*. San Jose, California, USA. May 14th
- J.A. Hachtel**, A. Mouti, D.C. Mayo, C.E. Marvinney, R. Mu, S.J. Pennycook, M.F. Chisholm, R.F. Haglund, S.T. Pantelides. **Probing plasmons in three dimensions in a scanning transmission electron microscope**. *APS March Meeting 2015*. San Antonio, Texas, USA. March 5th

CONTRIBUTED ORAL PRESENTATIONS CONTINUED...

- 2014 | **J.A. Hachtel**, D.C. Mayo, A. Mouti, C.E. Marvinney, R. Mu, S.J. Pennycook, M.F. Chisholm, R.F. Haglund, S.T. Pantelides. **Cathodoluminescence Imaging of Plasmonic Resonances in Ag-Coated ZnO/MgO Core-Shell Nanowires in an Aberration-Corrected Scanning Transmission Electron Microscope.** *8th International Workshop on Zinc Oxide and Related Materials.* Niagara Falls, Ontario, Canada. September 10th
- | **J.A. Hachtel**, R. Mishra, S.J. Pennycook, S.T. Pantelides. **Infrared absorption enhancement at nickel-silicide/silicon interfaces.** *APS March Meeting 2014.* Denver, Colorado, USA. March 5th
- 2013 | **J.A. Hachtel**, R. Sachan, O. Dyck, S. Fu, X. Shen, C. Gonzalez, P.D. Rack, G. Duscher, R. Kalyanaraman, S.T. Pantelides. **Absorption enhancement in amorphous silicon thin films via plasmonic resonances in nickel silicide nanoparticles.** *APS March Meeting 2013.* Baltimore Maryland, USA. March 21st