Curriculum Vitae (2015)
Robert M. Hovden

Applied and Engineering Physics
Cornell University, Ithaca NY

roberthovden.com
rmh244@cornell.edu

EDUCATION

Ph.D., Applied Physics, 2014, Cornell University
M.Sc., Applied and Engineering Physics, 2010, Cornell University
B.Sc. Summa Cum Laude, Physics, 2007, Georgia Institute of Technology

APPOINTMENTS

2014-present	Postdoctoral Associate, Applied Physics	Cornell University	NY
2007-2013	Graduate Research Assistant	Cornell University	NY
2006, 2005	Summer Researcher	Jet Propulsion Labs	CA
2007-2008, 2010	Teaching Assistant, Applied Physics	Cornell University	NY
2004-2007	Teaching Assistant, Mathematics	Georgia Tech	GA

SELECTED PUBLICATIONS (11 of 33, Google scholar: *h*-index 14, 1100+ citations, Erdős # 4)

11. *Nanoscale Assembly Processes for Nacre Formation in Mollusk Shells* (*Pinna Nobilis*), R. Hovden*, S.E. Wolf*, M.E. Holtz, F. Marin, D.A. Muller, L.A. Estroff (*accepted*) **Nature Comm.**
10. *Control of Metastable Charge Density Wave Phases in Ultrathin 1T-TaS_2*, A.W. Tsen, R. Hovden, D.Z. Wang, Y.D. Kim, J. Okamoto, K.A. Spoth, Y. Liu, W.J. Lu, Y.P. Sun, J. Hone, L. F. Kourkoutis, P. Kim, A.N. Pasupathy (*accepted*) ***Proc. Natl. Acad. Sci. U.S.A.***
9. *Breaking the Crowther limit: Combining depth-sectioning and tilt tomography for high-resolution, wide-field 3D reconstructions*, R. Hovden, P. Ercius, Y. Jiang, D. Wang, Y. Yu, H. D. Abruña, V. Elser, D.A. Muller, **Ultramicroscopy 140**, 26 (2014).
8. *Hierarchical Porous Polymer Scaffolds from Block Copolymers*, H. Sai, K. W. Tan, K. Hur, E. Asenath-Smith, R. Hovden, Y. Jiang, M. Riccio, D.A. Muller, V. Elser, L.A. Estroff, S.M. Gruner, U. Wiesner, **Science 341**, 6145 (2013).
7. *Strain Solitons and Topological Defects in Bilayer Graphene*, J.S. Alden, A.W. Tsen, P.Y. Huang, R. Hovden, L. Brown, J. Park, D.A. Muller, and P.L. McEuen, ***Proc. Natl. Acad. Sci. U.S.A.* 110**, 11256 (2013).
6. *Multicompartment Mesoporous Silica Nanoparticles with Branched Shapes: An Epitaxial Growth Mechanism*, T. Suteewong, H. Sai, R. Hovden, D. Muller, M. Bradbury, S.M. Gruner, U. Wiesner, **Science 340**, 6130 (2013).
5. *Channeling of a subangstrom electron beam in a crystal mapped to two-dimensional molecular orbitals*, R. Hovden, H.L. Xin, D.A. Muller, **Phys. Rev. B 86**, 195415 (2012).
4. *Structurally ordered intermetallic platinum–cobalt core–shell nanoparticles with enhanced activity and stability as oxygen reduction electrocatalysts*, D. Wang, H.L. Xin, R. Hovden, H. Wang, Y. Yu, D.A. Muller, F.J. DiSalvo, H.D. Abruña, **Nature Materials 12**, 81 (2012).
3. *Data Processing for Atomic Resolution Electron Energy Loss Spectroscopy*, P. Cueva, R. Hovden*, J.A Mundy, H. Xin, D.A Muller, **Microsc. & Microanaly. 18**, 667 (2012) **corr. author*
2. *Efficient elastic imaging of single atoms on ultrathin supports in a scanning transmission electron microscope*, R. Hovden, D.A. Muller, **Ultramicroscopy 123**, 59 (2012).
1. *Twinning and Twisting of Tri- and Bilayer Graphene*, L. Brown*, R. Hovden*, P. Huang, M. Wojcik, D.A. Muller, J. Park, **Nano Letters 12**, 1609 (2012) **co-first author*

INVITED TALKS (PARTIAL LIST)

6. *Atomic Imaging of 2D and 3D Materials with Scanning Transmission Electron Microscopy*, **Naval Research Lab**, Washington D.C., Oct, 2014.
5. *When Art Exceeds Perception*, **CCA Biennial Symposium: Intimate Cosmologies**, Ithaca NY, Sept, 2014.
4. *Artifact Reduction in Fourier Analysis of Atomic Resolution Images / The Cornell Spectrum Imager*, **NION Intl. Workshop on Electron Microscopy Software**, Iceland, March 2014.
3. *Open-Source Visualization of 3D Data: From Tomography to Spectroscopy*, **Kitware Inc.** Albany NY, March 2014.
2. *Imaging Limitations from 2D to 3D in Scanning Transmission Electron Microscopes*, **NION Inc.** Kirkland WA, Sept, 2013.
1. *3D and Spectroscopic Characterization of Devices At The Atomic Scale Using Aberration-Corrected Electron Microscopy*, **Frontiers of Characterization and Metrology for Nanoelectronics at NIST**, Gaithersburg MD, March 2013.

GRANTS AND HONORS

- Awarded **$1-million Phase II SBIR-DOE** Office of Science Grant (2015)
- Awarded $150k Phase I SBIR-DOE Office of Science Grant (2014)
- Awarded $1.5k Cornell Council of Arts Biennial Artist Grant (2014)
- $40k Kickstarter Math Education Documentary Film (2014)
- Microscopy Society of America Presidential Scholar (2011)
- NASA Tech Brief Initial Award (2010)
- G & C Johnson SCH Scholarship, Georgia HOPE Scholarship, GaTech Faculty Honors, MENSA

SYNERGISTIC ACTIVITIES

. Outreach through art. “When Art Exceeds Perception” brought nanoscience to millions using art. The work was featured on CNET, Wired, The Verge, among many other media outlets. Financed through an art foundation, the project explicitly communicated to nonscientific audiences.

. Developed free, open source software (over 10k downloads) for the processing and visualization of hyperspectral microscopy data (http://code.google.com/p/cornell-spectrum-imager/), and 3D tomographic data (www.tomviz.org). While commercial software solutions exist, they are often incomplete and locked to a single computer. This is a problem in microscope user facilities, which serves a broad community of hundreds of users, many from outside the institution. Our software allows users to process their data offline, and ensure their retained data is readable.

. Serve on Cornell Open Access Committee, a newly formed organization in charge of developing a modern open access policy for the university, its researchers, and library system.

. Brought artist-scientist, Joe Davis (Harvard) to speak at Cornell University colloquium.

. Published multiple open-source software tutorials for *Microscopy Today, Opensource.com,* and provided several conference talks at *Microscopy & Microanalysis* that foster open scientific development in the microscopy community.

COLLABORATORS & OTHER AFFILIATIONS

Graduate Advisor: Prof. David Muller (Cornell) Post-Doctoral Advisor: Lena Kourkoutis (Cornell) Collaborators (since Sept, 2010): Héctor Abruña, Lara Estroff, Jiwoong Park, Ulrich Wiesner, Richard Robinson, Sol Gruner, Paul McEuen, Darrell Schlom, John Silcox, Earl Kirkland (Cornell), Julia Mundy (Berkeley), Pinshane Huang (UIUC); Ondrej Krivanek (Nion); Peter Ercius (LBL); Huolin Xin (BNL); Wei Tsen (Columbia); Don-Hyung Ha (MIT); Hiroaki Sai (Northwestern); Judy J. Cha (Yale); Obert Wood (Global Foundries); Ted Wackler (OSTP, White House)

PUBLICATION LIST
A. SCIENTIFIC PAPERS

33. *Mapping Periodic Lattice Distortions in Exfoliated Dichalchogenides (1T-TaS_2) with Atomic Resolution Electron Microscopy*, R. Hovden, A. W. Tsen, B. H. Savitzky, P. Liu, Y. Liu, W. J. Lu, Y. Sun, P. Kim, A. N. Pasupathy, L. F. Kourkoutis (*submitted*)

32. *Nanoscale Assembly Processes for Nacre Formation in Mollusk Shells* (*Pinna Nobilis*), R. Hovden*, S.E. Wolf*, M.E. Holtz, F. Marin, D.A. Muller, L.A. Estroff (*accepted*) **Nature Comm.**

31. *Control of Metastable Charge Density Wave Phases in Ultrathin 1T-TaS_2*, A.W. Tsen, R. Hovden, D.Z. Wang, Y.D. Kim, J. Okamoto, K.A. Spoth, Y. Liu, W.J. Lu, Y.P. Sun, J. Hone, L. F. Kourkoutis, P. Kim, A.N. Pasupathy (*accepted*) ***Proc. Natl. Acad. Sci. U.S.A.***

30. High Dynamic Range Pixel Array Detector for Scanning Transmission Electron Microscopy M.W. Tate, P. Purohit, D. Chamberlain, K.X. Nguyen, R. Hovden, C.S. Chang, P. Deb, E. Turgut, J.T. Heron, D.G. Schlom, D.C. Ralph, G.D. Fuchs, K.S. Shanks, H.T. Philipp, D.A. Muller, S.M. Gruner (*in-review*)

29. *IL-TEM Imaging of Site-Selective Pt Nanocatalysts: Electrochemical Activation and Surface Disordering*, R. Arán-Ais, Y. Yu, R. Hovden, J. Solla-Gullon, E. Herrero, J. Feliu, H. Abruña, **J. Am. Chem. Soc.** (*accepted*)

28. *Hierarchically Structured Hematite Architectures Achieved by Growth in a Silica Hydrogel*, E. Asenath-Smith, R. Hovden, L.F. Kourkoutis, L.A. Estroff, **J. Am. Chem. Soc. 137**, 5184 (2015)

27. *Multicomponent Nanomaterials with Complex Networked Architectures from Orthogonal Degradation and Binary Metal Backfilling in ABC Triblock Terpolymers*, C.D. Cowman, E. Padgett, K.W. Tan, R. Hovden, Y. Gu, N. Andrejevic, D.A. Muller, G.W. Coates, and U. Wiesner, **J. Am. Chem. Soc. 137**, 6026 (2015)

26. Periodic Artifact Reduction in Fourier Transforms of Full Field Atomic Resolution Images, R. Hovden, Y. Jiang, H.L. Xin, L.F. Kourkoutis, **Microsc. & Microanaly. 21**, 436 (2015).

25. *Solid-Solid Phase Transformations Induced through Cation Exchange and Strain, in 2D Heterostructured Copper Sulfide Nanocrystals*, D.H. Ha, A.H. Caldwell, M.J. Ward, S. Honrao, K. Mathew, R. Hovden, M.K.A. Koker, D.A. Muller, R.G. Hennig, and R.D. Robinson, **Nano Letters 14**, 7090 (2014)

24. *Nanoparticle Metamorphosis: An in Situ High-Temperature Transmission Electron Microscopy Study of the Structural Evolution of Heterogeneous Au:Fe2O3 Nanoparticles*, W.J. Baumgardner, Y. Yu, R. Hovden, S. Honrao, R.G. Hennig, H.D. Abruña, D.A. Muller, T. Hanrath, **ACS Nano 8**, 5315 (2014).

23. *Breaking the Crowther limit: Combining depth-sectioning and tilt tomography for high-resolution, wide-field 3D reconstructions*, R. Hovden, P. Ercius, Y. Jiang, D. Wang, Y. Yu, H.D. Abruña, V. Elser, D.A. Muller, **Ultramicroscopy 140**, 26 (2014).

22. *Atomic Imaging with Highly Convergent Electron Beams*, R. Hovden, **Ph.D. Dissertation, Cornell University** (2014).

21. *Stacking Order Dependent Second Harmonic Generation and Topological Defects in h-BN Bilayers*, C.J. Kim, L. Brown, M.W. Graham, R. Hovden, R.W. Havener, P.L. McEuen, D.A. Muller, J. Park, **Nano Letters 13**, 5660 (2013).

20. *Hierarchical Porous Polymer Scaffolds from Block Copolymers*, H. Sai, K.W. Tan, K. Hur, E. Asenath-Smith, R. Hovden, Y. Jiang, M. Riccio, D.A. Muller, V. Elser, L.A. Estroff, S.M. Gruner, U. Wiesner, **Science 341**, 6145 (2013).

19. *Strain Solitons and Topological Defects in Bilayer Graphene*, J. S. Alden, A.W. Tsen, P.Y. Huang, R. Hovden, L. Brown, J. Park, D.A. Muller, and P.L. McEuen, ***Proc. Natl. Acad. Sci. U.S.A.* 110**, 11256 (2013).

18. *Multicompartment Mesoporous Silica Nanoparticles with Branched Shapes: An Epitaxial Growth Mechanism*, T. Suteewong, H. Sai, R. Hovden, D.A. Muller, M. Bradbury, S.M. Gruner, U. Wiesner, **Science 340**, 6130 (2013).
17. *Bibliometrics for Internet Media: Applying the h-Index to YouTube,* R. Hovden, **J. Am. Soc. Inf. Sci. Tec 64**, 2326 (2013).
16. *Defining Crystalline/Amorphous Phases of Nanoparticles through X-ray Absorption Spectroscopy and X-ray Diffraction: The Case of Nickel Phosphide*, L.M. Moreau, D.H. Ha, H. Zhang, R. Hovden, D.A. Muller, and R.D. Robinson, **Chem. Mater. 25**, 2394 (2013).
15. *Channeling of a subangstrom electron beam in a crystal mapped to two-dimensional molecular orbitals*, R. Hovden, H.L. Xin, D.A. Muller, **Phys. Rev. B 86**, 195415 (2012).
14. *Structurally ordered intermetallic platinum–cobalt core–shell nanoparticles with enhanced activity and stability as oxygen reduction electrocatalysts*, D. Wang, H.L. Xin, R. Hovden, H. Wang, Y. Yu, D.A. Muller, F. J. DiSalvo, H.D. Abruña, **Nature Materials 12**, 81 (2012).
13. *Tuning ORR Activity via Controllable Dealloying: A Model Study of Ordered Cu3Pt/C Intermetallic Nanocatalysts*, D. Wang, Y. Yu, H.L. Xin, R. Hovden, P. Ercius, J.A. Mundy, H. Chen, JH Richard, D.A. Muller, F.J. DiSalvo, and H.D. Abruña, **Nano Letters 12**, 5230 (2012).
12. *Data Processing for Atomic Resolution Electron Energy Loss Spectroscopy*, P. Cueva, R. Hovden*, J A Mundy, H. Xin, D A Muller, **Microsc. & Microanaly. 18**, 667 (2012) **corr. author*
11. *Efficient elastic imaging of single atoms on ultrathin supports in a scanning transmission electron microscope*, R. Hovden, D.A. Muller, **Ultramicroscopy 123**, 59 (2012).
10. *Twinning and Twisting of Tri- and Bilayer Graphene*, L. Brown*, R. Hovden*, P. Huang, M. Wojcik, D.A. Muller, J. Park, **Nano Letters 12**, 1609 (2012) **co-first author*
9. *Direct Imaging of a Two-Dimensional Silica Glass on Graphene*, P.Y. Huang, S. Kurasch, A. Srivastava, V. Skakalova, J. Kotakoski, A.V. Krasheninnikov, R. Hovden, Q. Mao, J.C. Meyer, J. Smet, D.A. Muller, U. Kaiser, **Nano Letters 12**, 1081(2012).
8. *Three-Dimensional Tracking and Visualization of Hundreds of Pt−Co Fuel Cell Nanocatalysts During Electrochemical Aging*, Y. Yu, H.L. Xin, R. Hovden, D. Wang, E.D. Rus, J.A. Mundy, D. A. Muller, and H.D. Abruña, **Nano Letters 12**, 4417 (2012).
7. *Atomic-Resolution Spectroscopic Imaging of Ensembles of Nanocatalyst Particles Across the Life of a Fuel Cell*, H.L. Xin*, J.A. Mundy*, Z. Liu, R. Cabezas , R. Hovden, L.F. Kourkoutis, J. Zhang, N Subramanian, R Makharia, F Wagner, and DA Muller, **Nano Letters 12**, 490 (2011)
6. *Networked and chiral nanocomposites from ABC triblock terpolymer coassembly with transition metal oxide nanoparticles*, M. Stefik, S. Wang , R. Hovden, H. Sai, M.W. Tate , D.A. Muller , U. Steiner , S.M. Grunerand, U. Wiesner, **J. Mater. Chem. 22**, 1078 (2011).
5. *Surfactant Ligand Removal and Rational Fabrication of Inorganically Connected Quantum Dots*, H. Zhang, B. Hu, L. Sun, R. Hovden, F.W. Wise, D.A. Muller, and R.D. Robinson, **Nano Letters 11**, 5356 (2011).
4. *Extended Depth of Field for High-Resolution Scanning Transmission Electron Microscopy,* R. Hovden, H.L. Xin, D.A. Muller, **Microsc. & Microanaly. 17**, 75 (2011).
3. *Controlled Synthesis of Uniform Cobalt Phosphide Hyperbranched Nanocrystals Using Tri-n-octylphosphine Oxide as a Phosphorus Source*, H. Zhang, D.H. Ha, R. Hovden, L.F. Kourkoutis, R.D. Robinson, **Nano Letters 11**, 188 (2011).
2. *Deep Space Network Scheduling Using Evolutionary Computational Methods*, A. Guillaume, S. Lee, Y. Wang, H. Zheng, R. Hovden, S. Chau, Y. Tung, R.J. Terrile, **IEEE Aerospace Conference 2007** paper #1210 (2007).
1. *Analysis and Enhancement of Carding and Spinning*, A. Saxena, A. Kansal, P. He, R. Hovden, Y. Jeong, M.L. Realff, R. Parachuru, J.L. Dorrity, B.C. Goswami, F.L. Cook, Y. Wang, **National Textile Center Annual Report**; NTC Project: F01-GT06 (2003).

B. CONTRIBUTED TALKS (IN ADDITION TO INVITED TALKS)

15. *Periodic Artifact Reduction in Fourier Transforms of Full Field Atomic Resolution Images*, **Microscopy and Microanalysis**, Portland OR, Aug. 2015
14. *Repeatable and Transferable Processing for Electron Tomography: An Open Platform for Visualization and Reconstruction of 3D Materials*, **Microscopy & Microanalysis**, Portland 2015
13. *Reductio Ad Absurdum* (practice-led artist) **Hybrid Practices Conference, University of Kansas / Spencer Museum of Art**, Lawrence KA, 2015
12. *Atomic Imaging Across Strain Boundaries in Bilayer Graphene with ADF-STEM and DF-TEM*, **Microscopy and Microanalysis**, Hartford CT, Aug. 2014.
11. *Breaking the Crowther Limit: Combed Depth-Sectioning and Tilt Series for High-Res, Wide-Field Reconstructions*, **Microscopy and Microanalysis**, Indianapolis IN, Aug. 2013.
10. *Open-Source Visualization of 3D Data: From Tomography to Spectroscopy*, **Microscopy and Microanalysis**, Indianapolis IN, Aug. 2013.
9. *Tilted Dark Field TEM of Twinning and Twisting in Tri- and Bi-layer Graphene*, **Microscopy and Microanalysis**, Phoenix AZ, Aug. 2012.
8. *High-Resolution, Through-Focal Tomography of Ensembles of Porous PtCu Nanoparticles*, **Materials Research Society**, Boston MA, Fall 2012.
7. Three-dimensional and Spectroscopic Characterization of Devices at the Atomic Scale Using Aberration-corrected Electron Tomography, **Nanoengineered Materials Annual Review**, University of North Texas in Denton, June 2012.
6. *Efficient Elastic Imaging of Single Atoms with Aberration-Corrected Scanning Transmission Electron Microscopy*, **Microscopy and Microanalysis**, Nashville TN, Aug. 2011.
5. *3D and Spectroscopic Characterization of Devices at the Atomic Scale Using Aberration-Corrected Electron Tomography*, **Tech Con**, Austin TX, Sept. 2011.
4. *Extending the Depth of Field in Aberration-Corrected STEM by 3D Sectioning*, **Microscopy and Microanalysis**, Portland OR, Aug. 2010.
3. *3D and Spectroscopic Characterization of Devices at the Atomic Scale Using Aberration-Corrected Electron Tomography*, **Semiconductor Research Corporation GRC Patterning Review**, University of Massachusetts-Amherst MA, November, 2010.
2. *Atomic-Scale Chemical Reactions at Buried Interfaces in Copper/Low-K Interconnects, Semiconductor*, **Research Corporation GRC Back End Processes and Packaging Review**, University at Albany-SUNY, October 2010.
1. *3D and Spectroscopic Characterization of Devices at the Atomic Scale Using Aberration-Corrected Electron Tomography*, **Semiconductor Research Corporation GRC Patterning Review**, Amherst MA, October 2009.

C. CONFERENCE PROCEEDINGS (PARTIAL LIST)

33. *Mapping Periodic Lattice Distortions in Exfoliated Dichalchogenides (1T-TaS_2) with Atomic Resolution Electron Microscopy,* R. Hovden, A.W. Tsen, B.H. Savitzky, P. Liu, Y. Liu, W.J. Lu, Y. Sun, P. Kim, A.N. Pasupathy, L.F. Kourkoutis, **Materials Research Society**, Fall (2014)
32. *Long Range Order in Square PbSe Quantum Dot Solids Mediated by Thickness and Atomic Connectivity,* B.H. Savitzky, R. Hovden, K. Whitham, T. Hanrath, and L.F. Kourkoutis **Microsc. & Microanaly.**, (*in press*) Portland OR, Aug. (2015)
31. *Lorentz-STEM imaging of Fields and Domains using a High-Speed, High-Dynamic Range Pixel Array Detector at Atomic Resolution,* K.X. Nguyen, R. Hovden, M.W. Tate, P. Purohit, J. Heron, C. Chang, S.M. Gruner, D.A. Muller, **Microsc. & Microanaly.**, (*in press*) Portland OR, Aug. (2015)

30. *Imaging Local Polarization and Domain Boundaries in Multiferroic (LuFeO3)m/(LuFe2O4)n Superlattices*, M.E. Holtz, J.A. Mundy, J.A. Moyer, C.M. Brooks, H. Das, A.F. Rebola, R. Hovden, C.J. Fennie, P. Schiffer, D.G. Schlom, D.A. Muller, **Microsc. & Microanaly.**, (*in press*) Portland OR, Aug. (2015)
29. *Periodic Artifact Reduction in Fourier Transforms of Full Field Atomic Resolution Images*, R. Hovden, Y. Jiang, H.L. Xin, L.F. Kourkoutis, **Microsc. & Microanaly.** (*in press*) Portland OR, Aug. (2015)
28. *Repeatable and Transferable Processing for Electron Tomography: An Open Platform for Visualization and Reconstruction of 3D Materials*, R. Hovden, M.D. Hanwell, U. Ayachit, Y. Jiang, R. Maynard, and D.A. Muller, **Microsc. & Microanaly.**, (*in press*) Portland OR, (2015)
27. *Control of Metastable Charge Density Wave Phases in Ultrathin 1T-TaS_2*, A.W. Tsen, R. Hovden, D. Wang, Y.D. Kim, Y. Liu, W. Lu, Y. Sun, J. Hone, L.F. Kourkoutis, P. Kim, A. Pasupathy, **APS Mar. Meeting Abstracts 1,** 15 (2015)
26. *When Art Exceeds Perception*, **Hybrid Practices Conference - Spencer Museum of Art**, R. Hovden, Lawrence KA, (2015)
25. *tomviz: Open-Source Visualization and Analysis Platform for 3D Reconstructions of Materials,* R. Hovden, M. Hanwell, U. Ayachit, D.A. Muller, **Microsc. & Microanaly. 20** (Suppl. S3) (2014)
24. *Compressed Sensing, Sparsity, and the Reliability of Tomographic Reconstructions*, Y. Jiang, R. Hovden, D.A. Muller and V. Elser, **Microsc. & Microanaly. 20**, (Suppl. S3), 796, (2014)
23. *STEM Characterization of Nano-Crystallites in the Nacre Biomineralization of Mollusk Shells (Pinna Nobilis)*, R. Hovden, S.E. Wolf, M.E. Holtz, D.A. Muller and L.A. Estroff, **Microsc. & Microanaly. 20**, (Suppl. S3), 1332, (2014)
22. *Atomic Imaging Across Strain Boundaries in Bilayer Graphene with ADF-STEM and DF-TEM*, R. Hovden, J. Alden, A.W. Tsen, P.Y. Huang, L. Brown, J. Park, P.L. McEuen, D.A. Muller, **Microsc. & Microanaly. 20**, (Suppl. S3), 1058, (2014)
21. *Three-Dimensional Arrangement and Connectivity of Lead-Chalcogenide Nanoparticle Assemblies for Next Generation Photovoltaics*, B.H. Savitzky, K. Whitham, K. Bian, R. Hovden, T. Hanrath, L.F. Kourkoutis, **Microsc. & Microanaly. 20**, (Suppl. S3), 542, (2014)
20 *2D Quantum Well Heterostructures Formed in Semiconducting Nanoparticles Through Partial Cation Exchange*, D.H. Ha, A.H. Caldwell, R. Hovden, S. Honrao, R.G. Hennig, D.A. Muller, R.D. Robinson, **Materials Research Society**, Spring (2014)
19. *Three-Dimensional and Spectroscopic Characterization of Devices at the Atomic Scale Using Aberration-Corrected Electron Tomography*, R. Hovden, H.L. Xin, P. Ercius, Y. Jiang, V. Elser, D.A. Muller, **Frontiers of Characterization and Metrology for Nanoelectronics** (2013)
18. *Filling the Missing Wedge in Tomography: A Constraint-based Reconstruction Method for 3D TEM/STEM Imaging*, Y. Jiang, R. Hovden, P. Ercius, D. Wang, Y. Yu, H.D. Abruña, D.A. Muller, V. Elser, **Microsc. & Microanaly. 19**, (Suppl. S2), 768, (2013)
17. *Advanced Spectrum Analysis with Open Source Software*, P. Cueva, D.A. Muller, R. Hovden, **Microsc. & Microanaly. 16**, (Suppl. S2), 776, (2013)
16. *Breaking the Crowther Limit with "Sudoku" Tomography: Combining Depth-Sectioning and Tilt Series for High-Resolution, Wide-Field Reconstructions*, R. Hovden, P. Ercius, Y. Jiang, D. Wang, Y. Yu, H.D. Abruña, V. Elser, D.A. Muller, **Microsc. & Microanaly. 19**, (Suppl. S2), 542, (2013)
15. *Open-Source Visualization of 3D Data: From Tomography to Spectroscopy*, R. Hovden, P. Cueva, D.A. Muller, **Microsc. & Microanaly. 19**, (Suppl. S2), 836, (2013)

14. *Quantized Strain Channels in Bilayer Graphene*, A.W. Tsen, R. Hovden, J. Alden, P. Huang, L. Brown, D.A. Muller, P. McEuen, J. Park, **APS Mar. Meeting Abstracts 1**, 8008 (2013)
13. *Tilted Dark Field TEM of Twinning and Twisting in Tri- and Bi-layer Graphene*, R. Hovden, L. Brown, P. Huang, M. Wojik, D.A. Muller, J. Park, **Microsc. & Microanaly. 18**, (Suppl. S2), 1520, (2012)
12. *Quantitative Atomic-resolution Imaging and Spectroscopy of a 2D Silica Glass*, P.Y. Huang, R. Hovden, Q. Mao, D.A. Muller, S. Kurasch, U. Kaiser, J. Kotakoski, A. Krasheninnikov, A. Srivastava, V. Skakalova, J. Smet, J. Meyer, **Microsc. & Microanaly. 18** (Sup S2) 340, (2012)
11. *Structure-Property Relationships for Graphene Grains and Grain Boundaries*, D.A. Muller, P.Y. Huang, A.W. Tsen, R. Hovden, L. Brown, M.P. Levendorf, C.S. Ruiz-Vargas, M. Wojcik, J. Park, **Microsc. & Microanaly. 18**, (Suppl. S2), 1512, (2012)
10. *Failure of the Incoherent Imaging Approximation in "Sub-Angstrom" STEM Images: Real-Space Consequence of Electron Channeling*, R. Hovden, H.L. Xin, D.A. Muller, **Microsc. & Microanaly. 18**, (Suppl. S2), 714, (2012)
9. *New Approaches to Data Processing for Atomic Resolution EELS*, P. Cueva, R. Hovden, J.A. Mundy, H.L. Xin, D.A. Muller, **Microsc. & Microanaly. 18**, (Suppl. S2), 970, (2012)
8. *Imaging the Atoms in a Two-Dimensional Silica Glass on Graphene*, P.Y. Huang, R. Hovden, Q. Mao, D.A. Muller, S. Kurasch, U. Kaiser, A. Srivastava, V. Skakalova, J. Smet, J. Kotakoski, A Krasheninnikov, J. Meyer, **Microsc. & Microanaly. 18**, (Suppl. S2), 1496, (2012)
6. *Efficient Elastic Imaging of Single Atoms with Aberration-Corrected Scanning Transmission Electron Microscopy*, R. Hovden, D.A. Muller **Microsc. & Microanaly. 17**, 1254, (2011)
5. *Cornell Spectrum Imager: Open Source Spectrum Analysis with ImageJ*, P. Cueva, R. Hovden, D.A. Muller, **Microsc. & Microanaly. 17**, (Suppl. S2), 792, (2011)
4. *3-D Tracking and Visualization of Hundreds of Fuel Cell Nanocatalysts During Electrochemical Aging*, Y. Yu, H.L. Xin, R. Hovden, D. Wang, E.D. Rus, J.A. Mundy, D.A Muller, H.D. Abruña, **Microsc. & Microanaly. 17**, (Suppl. S2), 938, (2011)
3. *Determining Resolution in an Aberration-Corrected Era: Why Your Probe Is Larger Than You Thought*, R. Hovden, H.L. Xin, D.A. Muller, **Microsc. & Microanaly. 16**, (Sup. S2), 152, (2010)
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7. *Natural Rights, Scarcity & Intellectual Property*, **New York University Journal of Law & Liberty**, Fall 2013. **[peer reviewed]**
6. *Episode 1: The Feynman Files*, **Muckrock, the Podcast**, August 2013.
5. *The Open-Source Cornell Spectrum Imager*, **Microscopy Today**, January 2013.
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3. *Running Digital Micrograph on Linux and Mac OSX*, **Microscopy Today**, March 2012.
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1. *Evolutionary Scheduler for the Deep Space Network*, **NASA Tech Briefs**, July 2010.