

COREY OSES

Ph.D. Candidate in Materials Science, Duke University

PERSONAL INFORMATION

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EDUCATION

Ph.D. Candidate 2013–Present Duke University
GPA: 3.8/4.0 · Department: Mechanical Engineering and Materials Science
Thesis: *Advanced Techniques in High-Throughput Computational Materials Science*
Advisor: Stefano Curtarolo

Bachelor of Science 2009–2013 Cornell University
Department: Applied and Engineering Physics
Thesis: *Plume Propagation Simulation for Pulsed Laser Deposition*
Advisor: Joel Brock

RESEARCH

Duke University 2015–2018 Advanced Techniques in High-Throughput Computational Materials Science

- Completed Preliminary Defense — June 24, 2016.

Committee Members: Stefano Curtarolo, Cormac H. Toher, Laurens E. Howle & Gus L. W. Hart

Duke University 2015–2017 Fragment Descriptors for Predicting Property of Inorganic Crystals

- [Presentation Winner at the Engineering Science Symposium](#), SHPE National Conference — November 03, 2017.
- Presented at Third Annual Duke Chemistry Graduate Research Symposium — October 09, 2017.
- Presented at APS March Meeting — March 14, 2017.
- [Publication in Nat. Commun.](#) (2017).

Advisor: Stefano Curtarolo

Duke University 2014–2016 Modeling Off-Stoichiometry Materials

- Presentation Finalist at the Engineering Science Symposium, SHPE National Conference — November 04, 2016.
- Presented at APS March Meeting — March 16, 2016.
- [Publication in Chem. Mater.](#) (2016).

Advisor: Stefano Curtarolo

<i>Duke University</i>	<i>2014</i>	Materials Cartography
		<ul style="list-style-type: none"> Presented at BYU Condensed Matter Physics Seminar — February 18, 2016. Presented at Duke MEMS Department Graduate Student Seminar — September 25, 2015. Presented at APS March Meeting — March 02, 2015. Publication in Chem. Mater. (2015).
	Advisor: Stefano Curtarolo	
<i>Cornell University</i>	<i>Fall 2012–</i>	Plume Propagation Simulation for Pulsed Laser
	<i>Spring 2013</i>	Deposition
		<ul style="list-style-type: none"> Presented at NSF / AAAS / EHR Emerging Researchers National Conference — February 22, 2014. Technical poster presentation, MRS / ASM / AVS / AReMS Meeting at North Carolina State University — November 15, 2013. Technical Poster and Paper Finalist at the Engineering Science Symposium, SHPE National Conference — November 01, 2013. Best Presentation Award, Duke Mechanical Engineering and Materials Science (MEMS) Department Retreat — August 22, 2013.
	Advisor: Joel Brock	
<i>Cornell High Energy Synchrotron Source</i>	<i>Summer 2012</i>	Synchrotron Radiation Focusing Optics — Capillary Beam Stop Design
		<ul style="list-style-type: none"> First Place in Nanoscience and Physics Research Presentation, NSF / AAAS / EHR Emerging Researchers National Conference — March 02, 2013. Technical poster and research presentation, Cornell University LSAMP Research Symposium — August 07, 2012.
	Advisors: Ernest Fontes & Rong Huang	

TEACHING EXPERIENCE

<i>Teaching Assistant</i>	<i>Fall 2014–</i>	ME 221: Structure and Properties of Solids, Duke University Department of Mechanical Engineering and
	<i>Spring 2015</i>	Materials Science
		<ul style="list-style-type: none"> Best Teaching Assistant Award, Spring 2015

WORK EXPERIENCE AND SKILLS

<i>Proficient Coder</i>	<i>Present</i>	Python, \LaTeX , C++, MATLAB & R
<i>Graduate</i>	<i>September 2017</i>	<i>NextProf</i> Workshop at the University of Michigan
<i>Graduate</i>	<i>January 2015</i>	Machine Learning Summer School at the University of Texas, Austin
<i>Internship</i>	<i>Summer 2013</i>	Cornell High Energy Synchrotron Source (BioSAXS on F2 and G Beamlines)
		Supervisors: Richard Edward Gillilan & Ernest Fontes
<i>Graduate</i>	<i>May 2011</i>	<i>The LeaderShape Institute</i>

Technician License	July 2010	American Radio Relay League (ARRL)
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ACTIVITIES AND OUTREACH

Graduate Representative	2015–Present	Council of Presidents, Duke University Graduate School
Member	2014–Present	American Physical Society
Graduate Student Advisor	2009–Present	Society of Hispanic Professional Engineers, Duke University & Cornell University Positions: Graduate Student Advisor, President , Corporate Vice President & Treasurer
Distinguished Past Governor	2010–2013	Circle K, Cornell University Positions: New York District Distinguished Past Governor , New York District Distinguished Past Treasurer & Restarting Chapter President at Cornell University
Mechanical Engineer	2009–2011	Cornell University Autonomous Flight Team, Cornell University Positions: Mechanical Engineer & Safety Officer

PRESS AND NEWS RELEASES

MRS Bulletin	August 2017	“Universal fragment descriptor predicts materials properties” https://www.cambridge.org/core/journals/mrs-bulletin/news/universal-fragment-descriptor-predicts-materials-properties
UNC Eshelman School of Pharmacy	June 2017	“Breakthrough Tool Predicts Properties of Theoretical Materials, Finds New Uses for Current Ones” • This press release is featured on AAAS EurekAlert! and Phys.org . http://pharmacy.unc.edu/news/2017/06/06/breakthrough-tool-predicts-properties-theoretical-materials-finds-new-uses-current-ones/
Duke University Pratt School of Engineering Research	April 2017	“Computers Create Recipe for Two New Magnetic Materials” • This press release is featured on Phys.org , Slashdot , Hacker News , Reddit , engadget , The Engineer , Science Alert , Azo Materials , Next Big Future , Futurism , New Atlas , and International Business Times . http://pratt.duke.edu/about/news/predicting-magnets
Computational Chemistry Highlights	January 2015	“Materials Cartography: Representing and Mining Materials Space Using Structural and Electronic Fingerprints” • “This paper is a tour de force for computational materials science” — Prof. Alán Aspuru-Guzik, Harvard University. http://www.compchemhighlights.org/2015/01/materials-cartography-representing-and.html
Duke University Research	January 2015	“Molecular Tornado” https://research.duke.edu/molecular-tornado

Duke University	October 2014	"Competing for NSF Fellowships: Advice from a Current Fellow"	https://gradschool.duke.edu/professional-development/blog/competing-nsf-fellowships-advice-current-fellow
Duke University	June 2014	"Pratt Profiles: Corey Oses"	http://pratt.duke.edu/graduate/diversity/pratt-profiles-corey-oses
New York Kiwanis	February 2013	"New York Kiwanis Mid-Winter Conference 2013"	http://www.kiwanis-ny.org/1213/midyear.htm
New York Kiwanis	June 2012	"K-Kids Show Talent for Fundraising"	http://patch.com/new-york/eastmeadow/k-kids-show-talent-for-fundraising
New York Kiwanis	March 2012	"Past Circle K Governors Help Celebrate 50th Convention"	http://www.kiwanis-ny.org/news/view_news.php?nid=618
Cornell University	March 2011	"Undergraduate Student of the Month"	https://www.engineering.cornell.edu/diversity/about/honors/students/2011-03.cfm

HONORS AND AWARDS

Award	November 3, 2017	Presentation Winner at the Engineering Science Symposium, SHPE National Conference
Publication Award	2017	Editor's Choice, Publication in Comput. Mater. Sci., Elsevier
Award	November 4, 2016	Presentation Finalist at the Engineering Science Symposium, SHPE National Conference
Award	Spring 2015	Best Teaching Assistant Award (ME 221), Duke University Department of Mechanical Engineering and Materials Science
Publication Award	2015	Editor's Choice, Publication in Comput. Mater. Sci., Elsevier
Publication Award	2015	Editor's Choice, Publication in Chem. Mater., American Chemical Society
Fellowship	2013–2016	Graduate Research Fellowship, National Science Foundation
Fellowship	2013–2015	Associate Fellow, The National GEM Consortium
Award	November 1, 2013	Technical Poster and Paper Finalist at the Engineering Science Symposium, SHPE National Conference
Award	August 22, 2013	Best Presentation Award at the MEMS Departmental Retreat, Duke University Department of Mechanical Engineering and Materials Science

<i>City Citation</i>	<i>March 21, 2013</i>	New York City Citation as Circle K Governor, Council Member Fernando Cabrera
<i>Award</i>	<i>March 2, 2013</i>	First Place in Nanoscience and Physics Research Presentation , NSF / AAAS / EHR Emerging Researchers National Conference
<i>Scholarship</i>	<i>2011–2013</i>	Shell Incentive Fund Scholarship
<i>Honor</i>	<i>2010–2013</i>	Louis Stokes Alliance for Minority Participation (LSAMP) Scholar
<i>Scholarship</i>	<i>2010 & 2011</i>	Xerox Corporation Scholarship
<i>Scholarship</i>	<i>2010 & 2011</i>	Intel Academic Award
<i>Scholarship</i>	<i>2010–2013</i>	GE Foundation / LULAC Scholarship
<i>Scholarship</i>	<i>2009–2013</i>	Meinig Family Cornell National Scholars
<i>Scholarship</i>	<i>2009</i>	Gold Medallion Winner in Engineering and Mathematics , Hispanic Heritage Youth Awards
<i>Scholarship</i>	<i>2009</i>	New Jersey Principals and Supervisors Association Scholarship
<i>Scholarship</i>	<i>2009</i>	Edward J. Bloustein Distinguished Scholar
<i>Scholarship</i>	<i>2009</i>	Investors Savings Bank Scholarship
<i>Scholarship</i>	<i>2009</i>	Superintendent's Bengal Pride Award for Excellence in Academics and Citizenship
<i>Scholarship</i>	<i>2009</i>	Good Citizen Award, The Daughters of the American Revolution
<i>Honor</i>	<i>2008–2009</i>	National Honor Society

JOURNAL PUBLICATIONS

2017

<i>In Preparation</i>	12	<i>AFLOW Platform for Low-Temperature Thermodynamic Phase Stability Analyses</i> Authors: Corey Oses , Eric Perim, Eric Gossett, Frisco Rose & Stefano Curtarolo
<i>Submitted</i>	11	<i>Machine learning modeling of superconducting critical temperature</i> Authors: Valentin Stanev, Corey Oses , Aaron Gilad Kusne, Efrain Rodriguez, Johnpierre Paglione, Stefano Curtarolo & Ichiro Takeuchi arXiv: arxiv:1709.02727

Inorganic Chemistry	10	<i>The structure and composition statistics of 6A binary and ternary structures</i> Inorg. Chem. in press (2017) Authors: Alon Hever, Corey Oses , Stefano Curtarolo, Ohad Levy & Amir Natan DOI: 10.1021/acs.inorgchem.7b02462
	9	<i>AFLUX: The LUX materials search API for the AFLOW data repositories</i> Comput. Mater. Sci. 137 , 362–370 (2017) Authors: Frisco Rose, Cormac H. Toher, Eric Gossett, Corey Oses , Marco Buongiorno Nardelli, Marco Fornari & Stefano Curtarolo • This paper was selected for Editor's Choice . DOI: 10.1016/j.commatsci.2017.04.036
Computational Materials Science	8	<i>Universal Fragment Descriptors for Predicting Properties of Inorganic Crystals</i> Nat. Commun. 8 , 15679 (2017) Authors: Olexandr Isayev [†] , Corey Oses [†] , Cormac H. Toher, Eric Gossett, Stefano Curtarolo & Alexander Tropsha [†] contributed equally DOI: 10.1038/ncomms15679
	7	<i>Combining the AFLOW GIBBS and elastic Libraries to efficiently and robustly screening thermomechanical properties of solids</i> Phys. Rev. Mater. 1 , 015401 (2017) Authors: Cormac H. Toher, Corey Oses , Jose J. Plata, David J. Hicks, Frisco Rose, Ohad Levy, Maarten de Jong, Mark Asta, Marco Fornari, Marco Buongiorno Nardelli & Stefano Curtarolo DOI: 10.1103/PhysRevMaterials.1.015401
Physical Review Materials	6	<i>A Computational High-Throughput Search for New Ternary Superalloys</i> Acta Mater. 122 , 438–447 (2017) Authors: Chandramouli Nyshadham, Corey Oses , Jacob E. Hansen, Ichiro Takeuchi, Stefano Curtarolo & Gus L. W. Hart DOI: 10.1016/j.actamat.2016.09.017
	5	<i>Accelerated Discovery of New Magnets in the Heusler Alloy Family</i> Sci. Adv. 3 (4), e1602241 (2017) Authors: Stefano Sanvito, Corey Oses , Junkai Xue, Anurag Tiwari, Mario Zic, Thomas Archer, Pelin Tozman, Munuswamy Venkatesan, J. Michael D. Coey & Stefano Curtarolo DOI: 10.1126/sciadv.1602241
Science Advances		
2016		
Physical Review X	4	<i>High-Throughput Computation of Thermal Conductivity of High-Temperature Solid Phases: The Case of Oxide and Fluoride Perovskites</i> Phys. Rev. X 6 (4), 041061 (2016) Authors: Ambroise van Roekeghem, Jesús Carrete, Corey Oses , Stefano Curtarolo & Natalio Mingo DOI: 10.1103/PhysRevX.6.041061

- Chemistry of
Materials
- 3 *Modeling Off-Stoichiometry Materials with a High-Throughput Ab-Initio Approach*
Chem. Mater. **28**(18), 6484–6492 (2016)
Authors: Kesong Yang, [Corey Oses](#) & Stefano Curtarolo
DOI: [10.1021/acs.chemmater.6b01449](https://doi.org/10.1021/acs.chemmater.6b01449)

2015

- Computational
Materials Science
- 2 *The AFLOW Standard for High-Throughput Materials Science Calculations*
Comput. Mater. Sci. **108A**, 233–238 (2015)
Authors: Camilo E. Calderon, Jose J. Plata, Cormac H. Toher, [Corey Oses](#), Ohad Levy, Marco Fornari, Amir Natan, Michael J. Mehl, Gus L. W. Hart, Marco Buongiorno Nardelli & Stefano Curtarolo
• This paper was selected for [Editor's Choice](#).
DOI: [10.1016/j.commatsci.2015.07.019](https://doi.org/10.1016/j.commatsci.2015.07.019)
- Chemistry of
Materials
- 1 *Materials Cartography: Representing and Mining Materials Space Using Structural and Electronic Fingerprints*
Chem. Mater. **27**(3), 735–743 (2015)
Authors: Olexandr Isayev, Denis Fourches, Eugene N. Muratov, [Corey Oses](#), Kevin M. Rasch, Alexander Tropsha & Stefano Curtarolo
• This paper was selected for [Editor's Choice](#).
DOI: [10.1021/cm503507h](https://doi.org/10.1021/cm503507h)

BOOK PUBLICATIONS

2017

- In Preparation
- 1 Automated High-Throughput Computation of Material Properties, *Materials Informatics. Methods, Tools and Applications*
Authors: Cormac H. Toher, [Corey Oses](#) & Stefano Curtarolo