

# 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 \(Third Place\) at the Engineering Science Symposium](#), SHPE National Conference — November 3, 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 4, 2016.
- Presented at APS March Meeting — March 16, 2016.
- [Publication in Chem. Mater.](#) (2016).

**Advisor:** Stefano Curtarolo

<i>Duke University</i>	<i>2014</i>	<b>Materials Cartography</b>
		<ul style="list-style-type: none"> <li>Presented at BYU Condensed Matter Physics Seminar — February 18, 2016.</li> <li>Presented at Duke MEMS Department Graduate Student Seminar — September 25, 2015.</li> <li>Presented at APS March Meeting — March 2, 2015.</li> <li><b>Publication in Chem. Mater.</b> (2015).</li> </ul>
	<b>Advisor:</b> Stefano Curtarolo	
<i>Cornell University</i>	<i>Fall 2012–</i>	<b>Plume Propagation Simulation for Pulsed Laser</b>
	<i>Spring 2013</i>	<b>Deposition</b>
		<ul style="list-style-type: none"> <li>Presented at NSF / AAAS / EHR Emerging Researchers National Conference — February 22, 2014.</li> <li>Technical poster presentation, MRS / ASM / AVS / AReMS Meeting at North Carolina State University — November 15, 2013.</li> <li>Technical Poster and Paper Finalist at the Engineering Science Symposium, SHPE National Conference — November 1, 2013.</li> <li><b>Best Presentation Award</b>, Duke Mechanical Engineering and Materials Science (MEMS) Department Retreat — August 22, 2013.</li> </ul>
	<b>Advisor:</b> Joel Brock	
<i>Cornell High Energy Synchrotron Source</i>	<i>Summer 2012</i>	<b>Synchrotron Radiation Focusing Optics — Capillary Beam Stop Design</b>
		<ul style="list-style-type: none"> <li><b>First Place in Nanoscience and Physics Research Presentation</b>, NSF / AAAS / EHR Emerging Researchers National Conference — March 2, 2013.</li> <li>Technical poster and research presentation, Cornell University LSAMP Research Symposium — August 7, 2012.</li> </ul>
	<b>Advisors:</b> Ernest Fontes & Rong Huang	

## TEACHING EXPERIENCE

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

## WORK EXPERIENCE AND SKILLS

<i>Proficient Coder</i>	<i>Present</i>	Python, $\text{\LaTeX}$ , 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)
		<b>Supervisors:</b> 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 <b>Positions:</b> Graduate Student Advisor, <a href="#">President</a> , Corporate Vice President & Treasurer
<a href="#">Distinguished Past Governor</a>	2010–2013	Circle K, Cornell University <b>Positions:</b> New York District <a href="#">Distinguished Past Governor</a> , New York District <a href="#">Distinguished Past Treasurer</a> & <a href="#">Restarting Chapter President</a> at Cornell University
Mechanical Engineer	2009–2011	Cornell University Autonomous Flight Team, Cornell University <b>Positions:</b> Mechanical Engineer & Safety Officer

## PRESS AND NEWS RELEASES

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

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

#### HONORS AND AWARDS

Award	November 3, 2017	Presentation Winner (Third Place) 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>	<b>First Place in Nanoscience and Physics Research Presentation</b> , 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 &amp; 2011</i>	Xerox Corporation Scholarship
<i>Scholarship</i>	<i>2010 &amp; 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>	<b>Gold Medallion Winner in Engineering and Mathematics</b> , 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>	<b>Superintendent's Bengal Pride Award</b> 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> <b>Authors:</b> <a href="#">Corey Oses</a> , Eric Perim, Eric Gossett, Frisco Rose & Stefano Curtarolo
<i>Submitted</i>	11	<i>Machine learning modeling of superconducting critical temperature</i> <b>Authors:</b> Valentin Stanev, <a href="#">Corey Oses</a> , Aaron Gilad Kusne, Efrain Rodriguez, Johnpierre Paglione, Stefano Curtarolo & Ichiro Takeuchi <b>arXiv:</b> <a href="#">arxiv:1709.02727</a>

- Submitted 10 *The structure and composition statistics of 6A binary and ternary structures*  
**Authors:** Alon Hever, [Corey Oses](#), Stefano Curtarolo, Ohad Levy & Amir Natan  
**arXiv:** [arxiv:1703.04497](#)
- Computational Materials Science 9 *AFLUX: The LUX materials search API for the AFLOW data repositories*  
**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](#)
- Nature Communications 8 *Universal Fragment Descriptors for Predicting Properties of Inorganic Crystals*  
**Authors:** Olexandr Isayev<sup>†</sup>, [Corey Oses](#)<sup>†</sup>, Cormac H. Toher, Eric Gossett, Stefano Curtarolo & Alexander Tropsha  
<sup>†</sup> contributed equally  
**DOI:** [10.1038/ncomms15679](#)
- Physical Review Materials 7 *Combining the AFLOW GIBBS and elastic Libraries to efficiently and robustly screening thermomechanical properties of solids*  
**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](#)
- Acta Materialia 6 *A Computational High-Throughput Search for New Ternary Superalloys*  
**Authors:** Chandramouli Nyshadham, [Corey Oses](#), Jacob E. Hansen, Ichiro Takeuchi, Stefano Curtarolo & Gus L. W. Hart  
**DOI:** [10.1016/j.actamat.2016.09.017](#)
- Science Advances 5 *Accelerated Discovery of New Magnets in the Heusler Alloy Family*  
**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](#)
- 2016
- Physical Review X 4 *High-Throughput Computation of Thermal Conductivity of High-Temperature Solid Phases: The Case of Oxide and Fluoride Perovskites*  
**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