

COREY OSES

Ph.D. Candidate in Materials Science, Duke University

PERSONAL INFORMATION

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EDUCATION

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

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

PRESS AND NEWS RELEASES

MRS Bulletin August 2017 “Universal fragment descriptor predicts materials properties”
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](#).
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](#).
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.
compchemhighlights.org/2015/01/materials-cartography-representing-and.html

Duke University Research January 2015 “Molecular Tornado”
research.duke.edu/molecular-tornado

Duke University October 2014 “Competing for NSF Fellowships: Advice from a Current Fellow”
gradschool.duke.edu/professional-development/blog/competing-nsf-fellowships-advice-current-fellow

Duke University June 2014 “Pratt Profiles: Corey Oses”
pratt.duke.edu/graduate/diversity/pratt-profiles-corey-oses

New York Kiwanis February 2013 “New York Kiwanis Mid-Winter Conference 2013”
kiwanis-ny.org/1213/midyear.htm

New York Kiwanis June 2012 “K-Kids Show Talent for Fundraising”
patch.com/new-york/eastmeadow/k-kids-show-talent-for-fundraising

New York Kiwanis March 2012 “Past Circle K Governors Help Celebrate 50th Convention”
kiwanis-ny.org/news/view_news.php?nid=618

Cornell University March 2011 “Undergraduate Student of the Month”
engineering.cornell.edu/diversity/about/honors/students/2011-03.cfm

HONORS AND AWARDS

Publication Award	2018		Editor’s Choice, Publication in Comput. Mater. Sci. , Elsevier
Award	November 2017	3,	Presentation Winner at the Engineering Science Symposium , SHPE National Conference
Publication Award	2017		Editor’s Choice, Publication in Comput. Mater. Sci. , Elsevier
Award	November 2016	4,	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 2013	1,	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
City Citation	March 21, 2013		New York City Citation as Circle K Governor, Council Member Fernando Cabrera
Award	March 2, 2013		First Place in Nanoscience and Physics Research Presentation , NSF / AAAS / EHR Emerging Researchers National Conference
Scholarship	2011–2013		Shell Incentive Fund Scholarship
Honor	2010–2013		Louis Stokes Alliance for Minority Participation (LSAMP) Scholar
Scholarship	2010 & 2011		Xerox Corporation Scholarship
Scholarship	2010 & 2011		Intel Academic Award
Scholarship	2010–2013		GE Foundation / LULAC Scholarship
Scholarship	2009–2013		Meinig Family Cornell National Scholars
Scholarship	2009		Gold Medallion Winner in Engineering and Mathematics , Hispanic Heritage Youth Awards
Scholarship	2009		New Jersey Principals and Supervisors Association Scholarship
Scholarship	2009		Edward J. Bloustein Distinguished Scholar
Scholarship	2009		Investors Savings Bank Scholarship
Scholarship	2009		Superintendent’s Bengal Pride Award for Excellence in Academics and Citizenship

<i>Scholarship</i>	2009	Good Citizen Award, The Daughters of the American Revolution
<i>Honor</i>	2008–2009	National Honor Society

TALKS / PRESENTATIONS

<i>Poster Presentation</i>	2018	Cloud-oriented computational phase diagrams with AFLOW-CHULL CECAM (Centre Européen de Calcul Atomique et Moléculaire) Open Databases Integration for Materials Design (OPTiMaDe) Workshop, Lausanne, Switzerland — June 11, 2018.
<i>Contributed Talk</i>	2018	Universal Fragment Descriptors for Predicting Properties of Inorganic Crystals Contributed talk at the Hopkins Extreme Materials Institute Mach Conference, Annapolis, Maryland — April 05, 2018. Contributed talk at the SHPE National Conference, Kansas City, Missouri — November 03, 2017. • Presentation Winner at the Engineering Science Symposium Contributed talk at the Duke University Chemistry Department Third Annual Graduate Research Symposium, Durham, North Carolina — October 09, 2017. Contributed talk at the American Physical Society March Meeting, New Orleans, Louisiana — March 14, 2017.
<i>Invited Talk</i>	2018	Advancements in Materials Informatics with AFLOW Invited talk at the Fritz-Haber-Institut der Max-Planck-Gesellschaft Theory Department Seminar, Berlin, Germany — January 18, 2018. Invited talk at the Humboldt University of Berlin Physics Department Seminar, Berlin, Germany — January 16, 2018.
<i>Contributed Talk</i>	2016	Modeling Off-Stoichiometric Materials with a High-Throughput, <i>Ab-Initio</i> Approach Contributed talk at the SHPE National Conference, Seattle, Washington — November 04, 2016. • Presentation Finalist at the Engineering Science Symposium Contributed talk at the American Physical Society March Meeting, Baltimore, Maryland — March 16, 2016.
<i>Invited Talk</i>	2016	Materials Cartography: Representing and Mining Materials Space using Structural and Electronic Fingerprints Invited talk at the Brigham Young University Condensed Matter Physics Seminar, Provo, Utah — February 18, 2016. Contributed talk at the Duke Mechanical Engineering and Materials Science (MEMS) Department Graduate Student Seminar, Durham, North Carolina — September 25, 2015. Contributed talk at the American Physical Society March Meeting, San Antonio, Texas — March 02, 2015.
<i>Contributed Talk</i>	2014	Plume Propagation Simulation for Pulsed Laser Deposition Contributed talk at the NSF / AAAS / EHR Emerging Researchers National Conference, Washington, D.C. — February 22, 2014. Poster presentation at the MRS / ASM / AVS / AReMS Meeting, North Carolina State University, Raleigh, North Carolina — November 15, 2013. Contributed Talk Poster presentation at the SHPE National Conference, Indianapolis, Indiana — November 01, 2013. • Technical Poster and Paper Finalist at the Engineering Science Symposium Poster presentation at the Duke Mechanical Engineering and Materials Science (MEMS) Department Annual Retreat, Durham, North Carolina — August 22, 2013. • Best Presentation Award

2013
 Synchrotron Radiation Focusing Optics — Capillary Beam Stop Design
 Contributed talk at the NSF / AAAS / EHR Emerging Researchers National Conference, Washington, D.C. — March 02, 2013.
 • [First Place in Nanoscience and Physics Research Presentation](#)
 Poster presentation at the Cornell University Chapter of LSAMP Research Symposium, Ithaca, New York — August 07, 2012.

BOOK PUBLICATIONS 2018

- 3 Automated computation of materials properties, *Materials Informatics*
 Submitted Authors: Cormac Toher, [Corey Oses](#) & Stefano Curtarolo
 arXiv: [arxiv:1805.05309](#)
- 2 Machine learning and high-throughput approaches to magnetism, *to be determined*
 Submitted Authors: Stefano Sanvito, Mario Zic, James Nelson, Thomas Archer, [Corey Oses](#) & Stefano Curtarolo
- 1 The AFLOW Fleet for Materials Discovery, *Handbook of Materials Modeling. Volume 1 Methods: Theory and Modeling*
 Submitted Authors: Cormac Toher, [Corey Oses](#), David Hicks, Eric Gossett, Frisco Rose, Pinku Nath, Demet Usanmaz, Denise C. Ford, Eric Perim, Camilo E. Calderon, Jose J. Plata, Yoav Lederer, Michal Jahnátek, Wahyu Setyawan, Shidong Wang, Junkai Xue, Kevin M. Rasch, Roman V. Chepulsii, Richard H. Taylor, Geena Gomez, Harvey Shi, Andrew R. Supka, Rabih Al Rahal Al Orabi, Priya Gopal, Frank T. Cerasoli, Laalitha Liyanage, Haihang Wang, Ilaria Siloi, Luis A. Agapito, Chandramouli Nyshadham, Gus L. W. Hart, Jesús Carrete, Fleur Legrain, Natalio Mingo, Eva Zurek, Olexandr Isayev, Alexander Tropsha, Stefano Sanvito, Robert M. Hanson, Ichiro Takeuchi, Michael J. Mehl, Aleksey N. Kolmogorov, Kesong Yang, Pino D'Amico, Arrigo Calzolari, Marcio Costa, Riccardo De Gennaro, Marco Buongiorno Nardelli, Marco Fornari, Ohad Levy & Stefano Curtarolo
 arXiv: [arxiv:1712.00422](#)

JOURNAL PUBLICATIONS 2018

- 16 AFLOW-CHULL: Cloud-oriented platform for autonomous phase stability analysis
 Submitted Authors: [Corey Oses](#), Eric Gossett, David Hicks, Frisco Rose, Michael J. Mehl, Eric Perim, Ichiro Takeuchi, Stefano Sanvito, Matthias Scheffler, Yoav Lederer, Ohad Levy, Cormac Toher & Stefano Curtarolo
 arXiv: [arxiv:1806.06901](#)
- 15 Autonomous data-driven materials design of inorganic compounds with AFLOW
 Submitted Authors: [Corey Oses](#), Cormac Toher & Stefano Curtarolo
 arXiv: [arxiv:1803.05035](#)
- 14 Novel high-entropy high-hardness metal carbides discovered by entropy descriptors
 Submitted Authors: Pranab Sarker[†], Tyler Harrington[†], Cormac Toher, [Corey Oses](#), Mojtaba Samiee, Jon-Paul Maria, Donald W. Brenner, Kenneth S. Vecchio & Stefano Curtarolo
[†] contributed equally
- 13 Machine learning modeling of superconducting critical temperature
 NPJ Computational Materials Authors: Valentin Stanev, [Corey Oses](#), Aaron Gilad Kusne, Efrain Rodriguez, Johnpierre Paglione, Stefano Curtarolo & Ichiro Takeuchi
 DOI: [10.1038/s41524-018-0085-8](#)

- 2017
- Computational Materials Science 12 *AFLOW-ML: A RESTful API for machine-learning prediction of materials properties*
Comput. Mater. Sci. **152**, 134–145 (2018)
Authors: Eric Gossett, Cormac Toher, [Corey Oses](#), Olexandr Isayev, Fleur Legrain, Frisco Rose, Eva Zurek, Jesús Carrete, Natalio Mingo, Alexander Tropsha & Stefano Curtarolo
• This paper was selected for [Editor's Choice](#).
DOI: [10.1016/j.commatsci.2018.03.075](#)
- Acta Crystallographica Section A 11 *AFLOW-SYM: platform for the complete, automatic and self-consistent symmetry analysis of crystals*
Acta Cryst. A **74**, 184–203 (2018)
Authors: David Hicks, [Corey Oses](#), Eric Gossett, Geena Gomez, Richard H. Taylor, Cormac Toher, Michael J. Mehl, Ohad Levy & Stefano Curtarolo
DOI: [10.1107/S2053273318003066](#)
- Inorganic Chemistry 10 *The structure and composition statistics of 6A binary and ternary structures*
Inorg. Chem. **57**(2), 653–667 (2017)
Authors: Alon Hever, [Corey Oses](#), Stefano Curtarolo, Ohad Levy & Amir Natan
DOI: [10.1021/acs.inorgchem.7b02462](#)
- Computational Materials Science 9 *AFLUX: The LUX materials search API for the AFLOW data repositories*
Comput. Mater. Sci. **137**, 362–370 (2017)
Authors: Frisco Rose, Cormac 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*
Nat. Commun. **8**, 15679 (2017)
Authors: Olexandr Isayev[†], [Corey Oses](#)[†], Cormac Toher, Eric Gossett, Stefano Curtarolo & Alexander Tropsha
[†] 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*
Phys. Rev. Mater. **1**, 015401 (2017)
Authors: Cormac Toher, [Corey Oses](#), Jose J. Plata, David 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*
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](#)
- Science Advances 5 *Accelerated Discovery of New Magnets in the Heusler Alloy Family*
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. Coe & 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*
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](#)

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 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](#)

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](#)

TEACHING EXPERIENCE

Teaching Assistant Fall 2014–Spring 2015 ME 221: Structure and Properties of Solids, Duke University
Department of Mechanical Engineering and Materials Science

• [Best Teaching Assistant Award](#), Spring 2015

WORK EXPERIENCE

Internship Summer 2013 Cornell High Energy Synchrotron Source (BioSAXS on F2 and G Beamlines)

Supervisors: Richard Edward Gillilan & Ernest Fontes

Internship Summer 2012 Cornell High Energy Synchrotron Source

Supervisors: Rong Huang & Ernest Fontes

CERTIFICATIONS

Graduate September 2017 NextProf Workshop at the University of Michigan

Graduate January 2015 Machine Learning Summer School at the University of Texas at Austin

Graduate May 2011 The LeaderShape Institute

Technician License July 2010 American Radio Relay League (ARRL)

ACTIVITIES AND OUTREACH

Graduate Representative 2015–Present Council of Presidents, Duke University Graduate School

Member 2014–Present American Physical Society

<i>Graduate Student Advisor</i>	2009–Present	Society of Hispanic Professional Engineers, Duke University & Cornell University Positions: Graduate Student Advisor, President , Corporate Vice President & Treasurer
<i>Undergraduate Researcher</i>	2011–2013	Brock Research Group, Cornell University
<i>Distinguished Past Governor</i>	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
<i>Mechanical Engineer</i>	2009–2011	Cornell University Autonomous Flight Team, Cornell University Positions: Mechanical Engineer, Safety Officer & Systems Manager