COREY OSES

Ph.D. Candidate in Materials Science, Duke University

PERSONAL INFORMATION

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OBJECTIVE

To obtain a graduate degree and perform research relevant to Materials Science and Engineering in order to develop my technical and managerial skills toward academia and make significant contributions to Duke University.

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

2014 — Materials Cartography

Duke University

- 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 2, 2015.
- Publication in Chem. Mater. (2015).

Advisor: Stefano Curtarolo

Fall 2012–Spring 2013 — Plume Propagation Simulation for Pulsed Laser Deposition

Cornell University

- 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 1, 2013.
- Best Presentation Award, Duke Mechanical Engineering and Materials Science (MEMS) Department Retreat — August 22, 2013.

Advisor: Joel Brock

Summer 2012 — Synchrotron Radiation Focusing Optics — Capillary Beam Stop Design

Cornell High Energy Synchrotron Source

- First Place in Nanoscience and Physics Research Presentation, NSF / AAAS / EHR Emerging Researchers National Conference — March 2, 2013.
- Technical poster and research presentation, Cornell University LSAMP Research Symposium — August 7, 2012.

Advisors: Ernest Fontes & Rong Huang

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 and Skills

Proficient Coder — *Present* — `Python`, LaTeX, `C++`, `MATLAB` & `R`

Graduate — *September 2017* — *NextProf* Workshop at the University of Michigan

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

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

Supervisors: Richard Edward Gillilan & Ernest Fontes

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
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 (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

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*	Investors Savings Bank Scholarship
Scholarship	*2009*	Good Citizen Award, The Daughters of the American Revolution

Journal Publications

2017

In Preparation

12 *AFLOW Platform for Low-Temperature Thermodynamic Phase Stability Analyses*

Authors: Corey Oses, Eric Perim, Eric Gossett, Frisco Rose & Stefano Curtarolo

Submitted

11 *Machine learning modeling of superconducting critical temperature*

Authors: Valentin Stanev, Corey Oses, Aaron Gilad Kusne, Efrain Rodriguez, Johnpierre Paglione, Stefano Curtarolo & Ichiro Takeuchi
arXiv: arxiv:1709.02727

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*
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

Nature Communications

8 *Universal Fragment Descriptors for Predicting Properties of Inorganic Crystals*
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

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 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*
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. 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*
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 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

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

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