

COREY OSES

Ph.D. Candidate in Materials Science, Duke University

PERSONAL INFORMATION

email corey.oses@duke.edu
website <http://www.coreyoses.com>
phone (M) +1 (201) 674 1407 · (W) +1 (919) 684 1553

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) |
|--------------------|-----------|------------------------------------|

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 |
| | X | |

- 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