

# Matthew D. Witman

COMPUTATIONAL MATERIAL SCIENTIST · CHEMICAL ENGINEER

☎ (+1) 484-318-6213 | ✉ mwitman1@gmail.com | 🏠 mwitman1.github.io

## Education

### University of California, Berkeley

Berkeley, CA

PH.D. CANDIDATE IN THE DEPARTMENT OF CHEMICAL & BIOMOLECULAR ENGINEERING

Sep. 2014 - PRESENT

- Developed and programmed statistics/computer science/machine learning/material science techniques to successfully address novel research problems related to nanoporous materials for clean energy applications.
- Forged international collaborations between research teams at the University of California (Berkeley), NIST, University College London, École Polytechnique Fédérale de Lausanne (Switzerland), and the Norwegian University of Science and Technology (NTNU).

### Schreyer Honors College at the Pennsylvania State University

State College, PA

B.SC. IN CHEMICAL ENGINEERING (*Summa Cum Laude*)

Sep. 2009 - Dec. 2013

CHEMICAL ENGINEERING SEMESTER STUDY ABROAD (*University of Bath, UK*)

Spring 2011

## Experience

### UC Berkeley Laboratory of Molecular Simulation (Berend Smit Group)

Berkeley, CA

GRADUATE STUDENT RESEARCHER AND INSTRUCTOR

Jan. 2015 - CURRENT

- Trained an artificial neural network representation of atomic interactions in zeolites to significantly reduce the computational expense of molecular dynamics simulations while retaining quantum chemical accuracy.
- Coded a recursive, minimal cut graph theory algorithm to perform high-throughput data analysis and identify materials with previously unrecognized potential for 2-dimensional synthesis and application in water desalination.
- Developed statistical physics models and high-throughput screening techniques to identify systematic biases that arise when simulating adsorption in flexible materials.
- Derived and programmed an enhanced Monte Carlo sampling scheme to efficiently generate more and better statistical information when performing high-throughput materials screening for adsorption applications.
- Synthesized novel undergraduate course content (homeworks, exams, and projects) for chemical kinetics and reactor engineering and co-taught ~260 students throughout two semesters, achieving an average instructor rating of 4.4/5.

### General Electric, Inc.

Twinsburg, OH

PROCESS ENGINEERING INTERN

Jun. 2013 - Aug. 2013

- Coded a VBA application to automate the Returned Materials Authorization process and capitalize on a portion of the \$20 MM Enterprise Resource Planning investment that was being wasted.

### Janssen (A Pharmaceutical Company of Johnson & Johnson)

Raritan, NJ

CUSTOMER MANAGEMENT CO-OP

Jun. 2012 - Dec. 2012

- Wrote VBA programs to optimize data acquisition and demand planning analysis for the US Sales & Operations supply chain team to improve reporting accuracy and reduce monthly man hour requirements by 80% in a constrained work stream.
- Managed the monthly Executive Sales & Operations Planning Dashboard: automated the identification of poor alignments between financial and operating forecasts of Janssen's multi-\$BB Tier 1 product portfolio to create actionable intelligence for the North America leadership team.
- Implemented an automated statistical forecasting tool to monitor over 200 established pharmaceutical products which yielded improved forecast/demand alignment and inventory levels.

### PSU Department of Chemical Engineering (Enrique Gomez Group)

State College, PA

UNDERGRADUATE RESEARCHER

Jun. 2011 - Dec. 2013

- Constructed a block co-polymer organic photovoltaic device with record 3% efficiency due to a microphase separated active layer.
- Built, tested, and optimized organic electronic devices such as photovoltaic cells and transistors for 2+ years.

## Publications & Awards

---

### PUBLICATIONS:

- Authored 8 articles (4 as first author) in high impact journals such as Journal of the American Chemical Society, Chemical Science, Nature Communications, Journal of Physical Chemistry Letters, and ACS Central Science.

### AWARDS:

2017	<b>Thomas Young Centre Junior Research Fellowship</b> , Outstanding research project with a UK institution	London, UK
2016	<b>Peder Sather Fellowship</b> , Outstanding research project between UC Berkeley and a Norwegian institution	Berkeley, CA
2013	<b>Eagleton Design Award</b> , Best chemical plant design project among 2013 class of PSU chemical engineers	State College, PA
2012	<b>Platinum and Bronze Encore Awards</b> , Outstanding performance at Johnson & Johnson	Raritan, NJ
2011	<b>NSF-REU Fellowship</b> , Award to study organic photovoltaics at PSU	State College, PA

## Skills

---

<b>Programming</b>	Python, NumPy, SciPy, Bash (EXPERT); C/C++, Matlab, LaTeX (PROFICIENT); VBA, Blender, Aspen HYSYS (BASIC)
<b>Coursera Classes</b>	Machine Learning, Design of Algorithms I & II, Interactive Programming in Python I & II, Data Science at Scale ( <i>in progress</i> ), DeepLearning.AI Specialization ( <i>in progress</i> )
<b>Languages</b>	French (Niveau B1/B2)
<b>Outreach</b>	Bay Area Scientists in Schools (BASIS)
<b>Hobbies</b>	Snowboarding, Backpacking, Soccer, Art, Travel