

# NICHOLAS R. DAVID

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📍 Ann Arbor, MI, USA

🔗 nrdavid.github.io

📞 Upon Request

## EXPERIENCE

Ph.D. Pre-Candidate

**Sun Group @ University of Michigan**

📅 Aug 2022 – Now

📍 Ann Arbor, MI

- Developing new, data driven predictive theory of inorganic materials synthesis through Bayesian methods
- Machine-processing over 300,000 graduate applications for improving diversity, equity, and inclusion using large language models
- Constructing high dimensional, free energy surfaces from materials properties

Undergraduate Research

**Rollett Group @ Carnegie Mellon University**

📅 Aug 2021 – May 2022

📍 Pittsburgh, PA

- Implemented two materials science word2vec models for classifying abstracts' relevancy to superalloys
- Utilized unsupervised learning algorithms, t-SNE and UMAP, to understand hidden structures within gathered abstracts
- Fine-tuned a pre-trained materials science BERT language model for abstract classification
- Data mined over 50,000 materials science abstracts for training a multiclass classifier

Undergraduate Research Fellowship

**LIQUID Group @ Carnegie Mellon University**

📅 Aug 2020 – May 2022

📍 Pittsburgh, PA

- Synthesized thin film heterostructures using molecular beam epitaxy (MBE) for potential electronic applications
- Characterized thin films using XRD & AFM
- Fabricated shutter & motor boxes for the automation of lab equipment through LabView
- Disseminated work at American Physical Society (APS) March Meeting 2022

Software Test Engineer

**Pitney Bowes**

📅 Jun 2019 – Aug 2019

📍 Shelton, CT

- Tested and programmed the mailing application for Sendpro™ sending device
- Updated deprecated libraries in Android Studio to streamline custom android widgets
- Compiled test reports and analyzed errors to be remedied

Cybersecurity Intern

**IBM**

📅 May 2018 – Jul 2018

📍 Armonk, NY

- Analyzed penetration reports and developed multifaceted techniques to protect the companies crown jewel data
- Tested encryption software to be used by 300,000+ employees and 25,000+ customers
- Compiled and presented methodologies to protect internet facing applications to VP of Enterprise and Technology & Security

## EDUCATION

B.S. Materials Science Engineering  
Additional Major Applied Physics

**Carnegie Mellon University**

📅 May 2022

📍 Pittsburgh, PA

- 3.72/4.0 GPA | University Honors

High School Diploma

**Ridgefield High School**

📅 Graduated Jun 2018 📍 Ridgefield, CT

- 4.5/4.5 GPA | High Honors

## PUBLICATIONS

- **David, N.,** Sun, W. & Coley, C.W.  
The promise and pitfalls of AI for molecular and materials synthesis.  
Nat Comput Sci 3, 362–364 (2023).  
<https://doi.org/10.1038/s43588-023-00446-x>

## PROGRAMMING

Python C Java R Matlab  
LabView LaTeX

NumPy scikit-learn Pandas  
Transformers TensorFlow PyTorch  
Materials Project

Git Docker Jira Jekyll

## COURSEWORK

Machine Learning Algorithms  
Bayesian Statistics  
Natural Language Processing  
Solid-state Physics Thermodynamics  
Kinetics

## INTERESTS

Computational Materials Science  
Materials Synthesis Data Science  
Soccer Cooking Travel