

# Alex M. Ganose

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Date of Birth: 3<sup>rd</sup> September 1991

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## Education

### **University College London (2015 - present)**

EngD in Molecular Modelling and Materials Science

Preliminary thesis title: "Earth-abundant and non-toxic materials for energy applications."

### **University College London (2014 - 2015)**

MRes. in Molecular Modelling and Materials Science, Distinction

Dissertation title: "Tailoring the band gap of SnO<sub>2</sub> for improved transparent electronic conducting properties in solar cells."

### **University College London (2010 - 2014)**

MSci. in Natural Sciences (Organic Chemistry and Neuroscience), 1st Class Honours

Dissertation title: "Synthesis of novel covalent organic frameworks."

### **Manchester Grammar School, 2003 - 2010:**

A Levels - Chemistry (A), Physics (A), Maths (A), Biology (A)

10 GCSE's - Grade A\*- A

## Awards

2018 Materials Research Society (MRS) Graduate Student Award (Gold)

2017 Materials Research Society (MRS) Graduate Student Award (Silver)

2017 Awarded £3,000 for best use of ARCHER (UK national supercomputer)

2017 UCL Computational Chemistry poster presentation prize

2017 UCL M3S Industry Day poster presentation prize

2015 Violet Horshall Prize, UCL

## Teaching

2015 - present: Supervised 9 final year research projects at UCL

2015 - present: Demonstrator for M3S Computational Labs at UCL

2015 - present: Demonstrator for 1<sup>st</sup> and 2<sup>nd</sup> year Inorganic Chemistry Workshops at UCL

## Publications 20 published, 4 in submission (348 citations, H-index of 11, [Google Citations](#))

1. A. E. Maughan, **A. M. Ganose**, M. Almaker, D. O. Scanlon, and J. R. Neilson, Cation Size Effects on Cooperative Octahedral Tilting and Electronic Properties in Vacancy-Ordered Double Perovskites, *Chemistry of Materials*, accepted (2018)
2. **A. M. Ganose**, S. Matsumoto, J. Buckeridge, and D. O. Scanlon, Defect engineering of earth-abundant solar absorbers BiSI and BiSeI, *Chemistry of Materials*, accepted (2018) doi: 10.1021/acs.chemmater.8b01135

3. **A. M. Ganose**, L. Gannon, F. Fabrizi, H. Nowell, S. A. Barnett, H. Lei, X. Zhu, C. Petrovic, D. O. Scanlon, and M. Hoesch, Local corrugation and persistent charge density wave in  $\text{ZrTe}_3$  with Ni intercalation, *Physical Review B*, **97**, 155103 (2018) doi: 10.1103/PhysRevB.97.155103
4. Z. Wang, **A. M. Ganose**, C Niu, and D. O. Scanlon, First-principles insights into tin-based two-dimensional hybrid halide perovskites for photovoltaics, *Journal of Materials Chemistry A*, **6**, 5652–5660 (2018) doi: 10.1039/C8TA00751A
5. A. E. Maughan, **A. M. Ganose**, A. M. Candia, J. T. Granger, D. O. Scanlon, and J. R. Neilson, Anharmonicity and Octahedral Tilting in Hybrid Vacancy-Ordered Double Perovskites, *Chemistry of Materials*, **30**, 472–483 (2018) doi: 10.1021/acs.chemmater.7b04516
6. D. Biswas, **A. M. Ganose**, R. Yano, J. M. Riley, L. Bawden, O.J. Clark, J. Feng, L. Collins-Mcintyre, M.T. Sajjad, W. Meevasana, T.K. Kim, M. Hoesch, J.E. Rault, T. Sasagawa, D. O Scanlon, P. D. C. King, Narrow-band anisotropic electronic structure of  $\text{ReS}_2$ , *Physical Review B*, **96**, 085205 (2017) doi: 10.1103/PhysRevB.96.085205
7. C. N. Savory, **A. M. Ganose**, and D. O. Scanlon, Exploring the  $\text{PbS-Bi}_2\text{S}_3$  series for next generation energy conversion materials, *Chemistry of Materials*, **29**, 5156–5167 (2017) 10.1021/acs.chemmater.7b00628
8. **A. M. Ganose**, C. N. Savory, and D. O. Scanlon, Electronic and defect properties of  $(\text{CH}_3\text{NH}_3)_2\text{Pb}(\text{SCN})_2\text{I}_2$  analogues for photovoltaic applications, *Journal of Materials Chemistry A*, **5**, 7845–7853 (2017) doi: 10.1021/acs.chemmater.7b00464
9. C. H. Hendon, K. T. Butler, **A. M. Ganose**, Y. Roman-Leshkov, D. O Scanlon, G. A. Ozin, A. Walsh, Electroactive Nanoporous Metal Oxides and Chalcogenides by Chemical Design, *Chemistry of Materials*, **29**, 3663–3670 (2017) doi: 10.1039/C7TA01688C
10. **A. M. Ganose**, C. N. Savory, and D. O. Scanlon, Beyond Methylammonium Lead Iodide: Prospects for the Emergent Field of  $ns^2$  Containing Solar Absorbers, *Chemical Communications*, Accepted (2016) doi: 10.1039/C6CC06475B
11. C. N. Savory, **A. M. Ganose**, W. Travis, R. S. Atri, R. G. Palgrave and D. O. Scanlon, An Assessment of Silver Copper Sulphides for Photovoltaic Applications: Theoretical and Experimental Insights, *Journal of Materials Chemistry A*, **4**, 12648 (2016) doi: 10.1039/C6TA03376H
12. A. E. Maughan, **A. M. Ganose**, M. M. Bordelon, E. M. Miller, D. O. Scanlon, and J. R. Neilson, Defect Tolerance to Intolerance in the Vacancy Ordered Double Perovskite Semiconductors  $\text{Cs}_2\text{SnI}_6$  and  $\text{Cs}_2\text{TeI}_2$ , *Journal of the American Chemical Society*, **138**, 8453 (2016) doi: 10.1021/jacs.6b03207
13. N. F. Quackenbush, H. Paik, M. J. Wahila, S. Sallis, M. E. Holtz, X. Huang, **A. M. Ganose**, B. J. Morgan, D. O. Scanlon, Y. Gu, F. Xue, L.-Q. Chen, G. E. Sterbinsky, C. Schlueter, T.-L. Lee, J. C. Woicik, J.-H. Guo, J. D. Brock, D. A. Muller, D. A. Arena, D. G. Schlom, and L. F. J. Piper, The stability of the M2 phase of vanadium dioxide induced by coherent epitaxial strain, *Physical Review B*, **94**, 085105 (2016) doi: 10.1103/PhysRevB.94.085105
14. **A. M. Ganose**, M. Cuff, K. T. Butler, A. Walsh and D. O. Scanlon, Interplay of Orbital and Relativistic Effects in Bismuth Oxyhalides:  $\text{BiOF}$ ,  $\text{BiOCl}$ ,  $\text{BiOBr}$  and  $\text{BiOI}$ , *Chemistry of Materials*, **28**, 1980 (2016) doi: 10.1021/acs.chemmater.6b00349
15. W. Travis, C. Knapp, C. N. Savory, **A. M. Ganose**, P. Kafourou, X. Song, Z. Sharif, J. K. Cockcroft, D. O. Scanlon, H. Bronstein and R. G. Palgrave, Hybrid Organic-Inorganic Coordination Complexes as Tunable Optical Response Materials, *Inorganic Chemistry*, **55**, 3393 (2016) doi: 10.1021/acs.inorgchem.5b02749
16. **A. M. Ganose**, K. T. Butler, A. Walsh and D. O. Scanlon, Relativistic Electronic Structure and Band Alignment of  $\text{BiSI}$  and  $\text{BiSeI}$ : Candidate Photovoltaic Materials, *Journal of Materials Chemistry A*, **4**, 2060 (2016) doi: 10.1039/C5TA09612J

17. Y. Hu, N. Goodeal, Y. Chen, **A. M. Ganose**, R. G Palgrave, H. Bronstein, M. O. Blunt, Probing the chemical structure of monolayer covalent-organic frameworks grown via Schiff-base condensation reactions, *Chemical Communications*, **52**, 9941–9944 (2016)
18. **A. M. Ganose** and D. O. Scanlon, Band gap and work function tailoring of SnO<sub>2</sub> for improved transparent conducting ability in photovoltaics, *Journal of Materials Chemistry C*, **4**, 1467 (2016) doi: 10.1039/C5TC04089B
19. **A. M. Ganose**, C. N. Savory and D. O. Scanlon, (CH<sub>3</sub>NH<sub>3</sub>)<sub>2</sub>Pb(SCN)<sub>2</sub>I<sub>2</sub>: a more stable structural motif for hybrid halide photovoltaics?, *Journal of Physical Chemistry Letters*, **6**, 4594 (2015) doi: 10.1021/acs.jpcclett.5b02177
20. C. I. Hiley, D. O. Scanlon, A. A. Sokol, S. M. Woodley, **A. M. Ganose**, S. Angio, J. M. De Teresa, P. Manuel, D. D. Khalyavin, M. Walker, M. R. Lees, and R. I. Walton, Antiferromagnetism at T > 500K in the layered hexagonal ruthenate SrRu<sub>2</sub>O<sub>6</sub>, *Physical Review B*, **92**, 104413 (2015) doi: 10.1103/PhysRevB.92.104413

### Conference Presentations (Oral) (2016 – present)

1. **Contributed** “Improving the Stability of the Hybrid Perovskites – A New Structural Motif”, *MRS Spring Meeting*, Arizona, USA (2018)
2. **(Contributed** “Earth-Abundant Bismuth-Based Semiconductors as Novel Photovoltaics”, *MRS Spring Meeting*, Arizona, USA (2018)
3. **Contributed** “High ZT Thermoelectrics Identified from Defect Screening of Complex Oxides”, *MRS Spring Meeting*, Arizona, USA (2018)
4. **Contributed** “Beyond CH<sub>3</sub>NH<sub>3</sub>PbI<sub>3</sub>: Prospects for Emergent Solar Absorbers”, *MRS Spring Meeting*, Arizona, USA (2018)
5. **Contributed** “Identification of high ZT thermoelectrics from complex oxide screening”, *American Chemical Society*, New Orleans, USA (2018)
6. **Invited** “Defect Chemistry of Emerging Materials for Photovoltaics”, *Seminar*, Colorado State University, USA (2018)
7. **Contributed** “Identification of high ZT thermoelectrics from complex oxide screening”, *American Chemical Society*, New Orleans, USA (2018)
8. **Contributed** “Bismuth chalcogenides as earth-abundant and non-toxic photovoltaics”, *American Chemical Society*, New Orleans, USA (2018)
9. **Contributed** “Computational screening of complex oxides for high performance thermoelectrics”, *Thomas Young Centre Student Day*, University College London, UK, (2018)
10. **Invited** “The search for transparent oxide thermoelectrics”, *Thomas Young Centre Lunchtime Get-Together*, University College London, UK (2017)
11. **Invited** “Searching for high ZT oxide thermoelectrics”, *Spectroscopy Village*, Diamond Light Source, UK (2017)
12. **Contributed** “Screening of complex oxides for high ZT thermoelectrics”, *MRS Fall Meeting*, Boston, USA (2017)
13. **Contributed** “Non-toxic and earth-abundant V–VI–VII semiconductors for solar cells”, *Advances in Photovoltaics*, London, UK (2017)
14. **Invited** “Non-toxic and earth-abundant bismuth chalcogenide photovoltaics”, *CAM-IES*, London, UK (2017)
15. **Contributed** “Non-toxic and earth-abundant V–VI–VII semiconductors for solar cells”, *E-MRS Spring Meeting*, Strasbourg, France (2016)
16. **Contributed** “Beyond MAPbI<sub>3</sub>: the search for stable hybrid halide perovskites”, *E-MRS Spring Meeting*, Strasbourg, France (2016)
17. **Contributed** “Tuning the band gap of SnO<sub>2</sub> for improved transparent conducting oxide properties in photovoltaics”, *Material Chemistry Consortium Conference*, Cardiff, UK (2016)
18. **Contributed** “(CH<sub>3</sub>NH<sub>3</sub>)<sub>2</sub>Pb(SCN)<sub>2</sub>I<sub>2</sub>: a new more stable structural motif for hybrid halide photovoltaics?”, *RSC Next Generation Materials for Solar Photovoltaics*, London, UK (2016).
19. **Contributed** “The search for non-toxic and earth-abundant solar absorbers”, *SuperSolar Hub – Winter Technical Meeting*, London, UK (2016)

## **Work History**

### **Imanova Centre for Imaging Sciences, June - September 2013**

I created an electronic template of rodent CNS areas to integrate into the MCID imaging program and an automatic electronic weighing program for the laboratory balances. Additionally, I worked closely with the image analysis team to optimise MRI scan images.

### **Apple, August 2011 - August 2012**

I was responsible for repairing damaged mobile devices including both hardware and software issues. In this position there was a strong emphasis on time management, as we had a large number of customers to see per hour and any delays caused immediate backlogs.

### **Manchester University, June 2009**

Research assistant in the department of life sciences.

## **Other Skills**

Proficient at programming in Python, C++/Java/bash and using the command line.  
Experience using the LaTeX typesetting system.

## **Interests**

Active member of the UCL Chemical and Physical Society.  
Contributing to open source programming projects.  
Keen interest in music, technology, literature, and cycling.

## **References**

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