

Benjamin A. D. Williamson MSci, PhD, MRSC

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Employment

University College London (2018 – Present)

PDRA in Computational Materials Design

Scanlon Materials Theory Group

Advisor: Prof. David O. Scanlon

Education

University College London (2014 – 2018)

PhD in Computational Inorganic Materials Chemistry

Thesis title : *Understanding the Electronic and Thermodynamic Properties of Wide Band Gap Materials*

Supervisor: Prof. David O. Scanlon; Secondary Supervisor: Prof. Claire J. Carmalt

University College London (2010 – 2014)

MSci in Chemistry – 1st Class Honours

MSci dissertation title: *Computational Design of Next-Generation p-Type Semiconductors*

Supervisor: Prof. David O. Scanlon

BSc dissertation title: *Z-Schemes for Photocatalytic Water Splitting*

Supervisor: Prof. Furio Cora

The King's School, Rochester (2005 – 2010)

A-levels: Chemistry (A), Maths (B), Music: (B), Art (A)

9 GCSEs: Grade A*– B

Music Scholar, Academic Scholar and Prefect

Westminster Abbey Choir School (2000 – 2005)

Publications

1. *Computationally Driven Discovery of Layered Quinary Oxychalcogenide p-Type Transparent Conductors* **B.A.D. Williamson**, G.J. Limburn, G. Hyett and D.O. Scanlon; *ChemRxiv* (2018)
DOI: chemrxiv.7078205
2. *Phosphorus Doped SnO₂ Thin Films for Transparent Conducting Oxide Applications: Synthesis, Opto-electronic Properties and Computational Models*; M.J. Powell, **B.A.D. Williamson**, S-Y. Baek, J. Manzi, D. Potter, D. O. Scanlon and C.J. Carmalt; *Chemical Science*, just accepted (2018)
DOI: 10.1039/C8SC02152J
3. *A Novel Laboratory-based Hard X-ray Photoelectron Spectroscopy System*; A. Regoutz, M. Mascheck, T. Wiell, S.K. Eriksson, C. Liljenberg, K. Tetzner, **B.A.D. Williamson**, D. O. Scanlon and P. Palmgren; *Review of Scientific Instruments*, 89 (7), 073105 (2018)
DOI: 10.1063/1.5039829
4. *Chemical Vapor Deposition of Photocatalytically Active Pure Brookite TiO₂ Thin Films*; A.M. Alotaibi, S. Sathasivam, **B.A.D. Williamson**, A. Kafizas, C. Sotelo-Vazquez, A. Taylor, D.O. Scanlon, and I.P. Parkin; *Chem. Mater.*, 30 (4), 1353-1361 (2018)
DOI: 10.1021/acs.chemmater.7b04944
5. *A Deeper Understanding of Interstitial Boron-Doped Anatase Thin Films as A Multifunctional Layer Through Theory and Experiment*; M. Quesada-Gonzalez, **B.A.D. Williamson**, C. Sotelo-Vazquez, A. Kafizas, N.D. Boscher, R. Quesada-Cabrera, D.O. Scanlon, C.J. Carmalt, I.P. Parkin; *J. Phys. Chem. C*, 122

(I), 714-726 (2018)

DOI: 10.1021/acs.jpcc.7b11142

6. *Self-Compensation in Transparent Conducting F-Doped SnO₂*; J.E.N. Swallow, **B.A.D. Williamson**, T.J. Whittles, M. Birkett, T.J. Featherstone, N. Peng, A. Abbott, M. Farnworth, K.J. Cheetham, P. Warren, D.O. Scanlon, V.R. Dhanak, T.D. Veal; *Adv. Funct. Mater.*, 1701900 (2017)
DOI: 10.1002/adfm.201701900
7. *Chemical Vapor Deposition Synthesis and Optical Properties of Nb₂O₅ Thin Films with Hybrid Functional Theoretical Insight into Band Structure and Band Gaps*; S. Sathasivam, **B.A.D. Williamson**, S.A. Al Thabaiti, A.Y. Obaid, S.N. Basahel, M. Mokhtar, D.O. Scanlon, C.J. Carmalt, I.P. Parkin; *ACS Appl. Mater. Interfaces*, 9 (21), 18031-18038 (2017)
DOI: 10.1021/acsami.7b00907
8. *Computational and Experimental Study of Ta₂O₅ Thin Films*; S. Sathasivam, **B.A.D. Williamson**, A. Kafizas, S.A. Althabaiti, A.Y. Obaid, S.N. Basahel, D.O. Scanlon, C.J. Carmalt, I.P. Parkin; *J. Phys. Chem. C*, 121 (1), 202-210 (2017)
DOI: 10.1021/acs.jpcc.6b11073
9. *Transparent Conducting n-type ZnO:Sc – Synthesis, Optoelectronic Properties and Theoretical Insight*; S.C. Dixon, S. Sathasivam, **B.A.D. Williamson**, D.O. Scanlon, C.J. Carmalt, I.P. Parkin; *J. Mater. Chem. C*, 5, 7585-7597 (2017)
DOI: 10.1039/C7TC02389H
10. *Engineering Valence Band Dispersion for High Mobility p-Type Semiconductors*; **B.A.D. Williamson**, J. Buckeridge, J. Brown, S. Ansbro, R.G. Palgrave, D.O. Scanlon; *Chem. Mater.*, 29 (6), 2402-2413 (2017)
DOI: 10.1021/acs.chemmater.6b03306
11. *A Single-Source Precursor Approach to Solution Processed Indium Arsenide Thin Films*; P. Marchand, S. Sathasivam, **B.A.D. Williamson**, D. Pugh, S.M. Bawaked, S.N. Basahel, A.Y. Obaid, D.O. Scanlon, I.P. Parkin, C.J. Carmalt; *J. Mater. Chem. C*, 4, 6761-6768 (2016)
DOI: 10.1039/C6TC02293F

Conference Presentations

1. Contributed: B.A.D Williamson: *Engineering Valence Band Dispersion For High-Mobility p-type Semiconductors*, SSCG Christmas Meeting; Canterbury UK, 2015 – Poster
2. Contributed: B.A.D Williamson: *Engineering Valence Band Dispersion For High-Mobility p-type Semiconductors*, MRS Fall Meeting; Boston US, 2016 – Poster
3. Contributed: B.A.D Williamson: *Engineering Valence Band Dispersion For High-Mobility p-type Semiconductors*, E-MRS; Spring Meeting, Strasbourg France, 2017 – Oral
4. Contributed: B.A.D Williamson: *Beyond Conventional Doping in SnO₂*, E-MRS; Spring Meeting, Strasbourg France, 2017 – Poster
5. Invited: B.A.D Williamson: *Beyond Conventional Doping in SnO₂*, Thomas Young Centre, London UK, 2017 – Oral
6. Contributed: B.A.D Williamson: *Doubled Conductivity in Transparent Conducting In₂O₃ Through Novel Dopant Design*, Gordon Research Conference; Defects In Semiconductors, Colby-Sawyer College, New Hampshire, US, 2018 – Poster
7. Invited: B.A.D Williamson: *Doubled Conductivity in Transparent Conducting In₂O₃ Through Novel Dopant Design*, MCC 3rd Conference, Lincoln UK, 2018 – Oral
8. Contributed: B.A.D Williamson: *Doubled Conductivity in Transparent Conducting In₂O₃ Through Novel Dopant Design*, MMM Hub; Thomas Young Centre, London, UK, 2018 – Poster

Teaching

2014 – present: Supervised final year MSci research projects at UCL
2014 – present: Demonstrated in 1st year undergraduate workshops
2018 – present: Tutor in 1st year undergraduate inorganic chemistry course at UCL

Other Skills and Interests

Considerable experience in the Unix command line as well as in Bash and Python.
Experienced use with the *ab-initio* codes: VASP and Questaal.
Proficient experience in using the \LaTeX typesetting system as well as with the Microsoft Office suite.
Active committee member of the University of London Chamber Choir (2010 – present)
Keen interests in cycling, hill walking, classical music, literature and technology.

References

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Prof. Timothy D. Veal
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