

CONTACT

Dr. Andrew Preston (andrew@preston.co.nz)

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Department of Physics
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EDUCATION

Victoria University of Wellington, Wellington, NZ

PhD, School of Chemical and Physical Sciences, January 2010

Topic: Electronic structure of the rare-earth nitrides

Advisor: Dr. Ben Ruck

BSc (HONS), Physics, November 2005

Also completed major requirements for Math and Economics

EXPERIENCE

Boston University

2009 – 2011

Postdoc

Beamline scientist at soft x-ray beamline X1B, National Synchrotron Light Source, Brookhaven National Lab

- Proposed, designed, and performed experiments at X1B, at the Advanced Light Source, and at MAXlab
- Studied the electronic structure of novel materials using angle resolved photoemission spectroscopy and x-ray absorption and resonant x-ray emission spectroscopy
- Maintained and operated ultra high vacuum and cryogenic systems

iProfit

2010 – 2011

Founder and architect

An online arbitrage system which trades on **iPredict** (a New Zealand based prediction market)

- Built with python and django
- Completely automated and consistently profitable

Victoria University of Wellington

2006 – 2009

PhD

Used a range of techniques to elucidate the electronic structure of a range of rare-earth nitrides

- Grew epitaxial films using thermal evaporation and pulsed laser deposition
- Characterized films using XRD, RHEED, RBS, SQUID *&c.*
- Calculated electronic structures using both density functional and Hartree-Fock codes
- Determined electronic structure using temperature dependent optical and electrical conductivity, and with soft x-ray absorption and emission spectroscopy

PUBLICATIONS &
PRESENTATIONS

18. Phys. Rev. B 82, 235103 (2010)
17. Phys. Rev. B. 81, 233305 (2010)
16. Appl. Phys. Lett. **96**, 071914 (2010)
15. Phys. Chem. Chem. Phys. **12**, 3171 (2010)
14. *Electronic structure of the rare-earth nitrides*
PhD thesis (2010)
13. **A. R. H. Preston**, B. J. Ruck, W. R. L. Lambrecht, L. F. J. Piper, J. E. Downes,
K. E. Smith, H. J. Trodahl
*Electronic band structure information of GdN extracted from x-ray absorption
and emission spectroscopy*
Appl. Phys. Lett. **96**, 032101 (2010)
12. J. Magn. Magn. Mater. (2010)
11. J. Phys. Chem. C **114**, 1928 (2010)
10. J. Appl. Phys. **106**, 063910 (2009)
9. Phys. Rev. B **79**, 054301 (2009)
8. J. Appl. Phys. **104**, 103710 (2008)
7. Phys. Rev. B **78**, 174406 (2008)
6. **A. R. H. Preston**, B. J. Ruck, L. F. J. Piper, A. DeMasi, K. E. Smith,
A. Schleife, F. Fuchs, F. Bechstedt, J. Chai, and S. M. Durbin
Band structure of ZnO from resonant x-ray emission spectroscopy
Phys. Rev. B **78**, 155114 (2008)
5. Phys. Rev. B **76**, 085211 (2007)
4. **A. R. H. Preston**, S. Granville, D. H. Housden, B. Ludbrook, B. J. Ruck,
H. J. Trodahl, A. Bittar, G. V. M. Williams, J. E. Downes, A. DeMasi, Y. Zhang,
K. E. Smith, W. R. L. Lambrecht
*Comparison between experiment and calculated band structures for DyN and
SmN*
Phys. Rev. B **76**, 245120 (2007)
3. J. Mater. Sci.: Mater. Electron. **18**, 107 (2007)
2. Phys. Rev. B **73**, 235335 (2006)
1. J. Appl. Phys. **99**, 034312 (2006)

Complete list and details available at preston.co.nz

REFEREES

Dr. Ben Ruck (ben.ruck@vuw.ac.nz)

PhD supervisor

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Wellington 6011, NZL

Prof. Kevin E. Smith (ksmith@bu.edu)

Postdoc supervisor

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Emm. Prof. Joe Trodahl (joe.trodahl@vuw.ac.nz)

Secondary PhD supervisor

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Wellington 6011, NZL

Prof. Walter Lambrecht (walter.lambrecht@case.edu)

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Cleveland, OH 44106, USA