4th International Symposium on
Energy Challenges & Mechanics
- working on small scales

11-13 August 2015
Aberdeen, Scotland, UK

Speaker of Session 24

ENERGY IMPACT OF SUPERCONDUCTORS

Daniel Porter is a postdoctoral researcher at Diamond Light Source Ltd. Dan obtained his MPhys degree in Physics from the University of Liverpool in 2008. After this he moved to Royal Holloway, University of London to undertake a PhD in condensed matter physics, which he completed in 2012. His thesis was based around thermoelectric materials, using x-ray and neutron diffraction techniques to study their atomic and magnetic structures. In particular, he developed a reverse Monte Carlo program to determine the superstructures in several thermoelectric materials from diffraction data, and used these structural models to explain trends in the material's bulk properties.

After his PhD he stayed at Royal Holloway as a postdoc, where he continued his research on thermoelectrics and started new projects on iron-selenide superconductors and spin-ice materials.

As a postdoc at Diamond, Dan is working on new projects, including the use of resonant x-ray scattering techniques to determine the behaviour of frustrated magnetic materials and helping with the development of the Materials and Magnetism beamline, I16.

Relevant Publications in Peer Reviewed Journals:

Two-dimensional Cs-vacancy superstructure in iron-based superconductor $Cs_{0.8}Fe_{1.6}Se_2$
D. G. Porter, E. Cemal, D. J. Voneshen, K. Refson, M. J. Gutmann, A. Bombardi, A. T. Boothroyd, A. Krzton-Maziopa, E. Pomjakushina, K. Conder and J. P. Goff. *Phys. Rev. B* **91**, 144114 (2015)
http://dx.doi.org/10.1103/PhysRevB.91.144114

Divacancy superstructures in thermoelectric calcium-doped sodium cobaltate
D. G. Porter, M. Roger, M. J. Gutmann, S. Uthayakumar, D. Prabhakaran, A. T. Boothroyd, M. S. Pandiyan and J. P. Goff. *Phys. Rev. B* **90**, 054101 (2014)
http://dx.doi.org/10.1103/PhysRevB.90.054101

Vacancy defects and monopole dynamics in oxygen-deficient pyrochlores
G. Sala, M. J. Gutmann, D. Prabhakaran, D. Pomaranski, C. Mitchelitis, J. B. Kycia, D. G. Porter, C. Castelnovo and J. P. Goff. *Nature Materials* **13**, 488–493 (2014)
http://dx.doi.org/10.1038/nmat3924

Suppression of thermal conductivity by rattling modes in thermoelectric sodium cobaltate

D. J. Voneshen, K. Refson, E. Borissenko, M. Krisch, A. Bosak, A. Piovano, E. Cemal, M. Enderle, M. J. Gutmann, M. Hoesch, M. Roger, L. Gannon, A. T. Boothroyd, S. Uthayakumar, D. G. Porter and J. P. Goff. *Nature Materials* **12**, 1028–1032 (2013)

http://dx.doi.org/10.1038/nmat3739