

# Dr Matt Tucker

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Current Employer: UT-Battelle

## Employment and education

<b>Diffraction Section Head</b> , Oak Ridge National Lab, USA	2020 – Present
<b>Diffraction Group Leader</b> Oak Ridge National Lab, USA	2017 – 2020
<b>Advance Diffraction Group Leader</b> Spallation Neutron Source, USA	2016 – 2017
<b>Joint appointment</b> with Diamond Light Source Ltd, UK	2013 – 2016
<b>Instrument Scientist on Polaris</b> at ISIS spallation source, UK	2013 – 2016
<b>Instrument Scientist on PEARL</b> at ISIS spallation source, UK	2005 – 2013
<b>Postdoctoral Researcher</b> , Earth Sciences, University of Cambridge, UK	1998 – 2005
<b>PhD in Condensed Matter Physics</b> , University of Kent at Canterbury, UK	1995 – 1998
<b>BSc (Hons) Physics with Medical Physics</b> , Cardiff University, UK	1992 – 1995

## General Skills

**Scientific:** Powder diffraction, Total scattering, High pressure studies, Chemical synthesis, Rietveld analysis, McStas simulations and Reverse Monte Carlo analysis and software development.

**Computing:** Languages used: Fortran, Python, C, C++, C shell; Operating systems: Windows, Linux, Mac OS, VMS.

**Communication:** I give regular presentations at national and international meetings. I am the co-author of over 155 scientific publications. I have arranged and chaired several scientific meetings, conference sessions and PDF workshops. As described above, I have regular meetings with my group members and external teams to ensure clear and effective communication.

## International & National presentations (15 talks, 6 countries) 2017 – 2020

*Combined Neutron and Xray studies*, DEFNET-ETN, Diamond, UK, 2017 (Invited)

*Disorder, crystals and the forgotten parts of powder diffraction*, Chemistry Seminar, Uni' of Bath, UK, 2017 (Invited)

*Local structure of crystalline to amorphous materials*, QBS-Festa, Tsukuba, Japan, 2017 (Invited)

*Disorder, crystals and the forgotten parts of powder diffraction*, MLF-AMLAM, Tokyo, Japan, 2017 (Invited)

*RMCTProfile - Moving closer to complex modelling*, ACA, USA, 2017

*RMCTProfile - Moving closer to complex modelling*, Pittsburgh Diffraction Conference, USA, 2017 (Invited)

*Investigating Negative Thermal Expansion Materials using Neutron and X-ray Total Scattering*, ISNTE-II, Yokohama, Japan, 2017 (Invited)

*RMCTProfile - Moving closer to complex modelling*, Thermec, Paris, France, 2018

*Local structure of crystalline to amorphous materials*, CSJ2018, Sendai, Japan, 2018 (Invited)

*The next 30 years of RMC modelling*, RMC7, Budapest, Hungary, 2018

*RMCPProfile - Strange properties from a local point of view*, HTCC3, Bol, Croatia, 2018 (Invited)

*RMCPProfile - Moving closer to complex modelling*, JST International Symposium on Materials Informatics, The University of Tokyo, Japan, 2019 (Invited)

*RMCPProfile - Moving closer to complex modelling*, PDF workshop, Spring-8, Japan, 2019 (Invited)

*Current and Future Neutron Diffraction Capabilities at ORNL*, High Resolution Neutron Diffraction Workshop, Abingdon, UK, 2020 (Invited)

*RMCPProfile - RMC for disordered crystalline materials – Difficulties and Solutions*, 6th IROAST SYMPOSIUM: 1st PanPacific RMC Conference, Kumamoto University, Japan, 2020 (Invited)

## **International & National Sessions organized and Co-Chaired 2014 – 2020**

*MS11: Structure and properties of functional materials session*, EPDIC2014, Copenhagen, Denmark, 2014

*Pair Distribution Function*, 2017 Denver X-ray conference, Big Sky, USA, 2017

*MS08: Total scattering studies and disorder*, EPDIC16, Edinburgh, UK, 2018

## **Workshops organized (8 workshops/tutorials, 6 countries) 2013 – 2020**

*RMCPProfile 1 day tutorial*, RMC-5, Budapest, Hungary, 2013

*RMCPProfile tutorial (1/2 day)*, ADD2013, ILL, France, 2013

*PDF Analysis Satellite Meeting (2 day meeting)*, European Crystallography Meeting, Warwick, UK, 2013

*RMCPProfile tutorial (1/2 day)*, Chalmers meeting, Sweden, 2014

*RMCPProfile workshop (2 Days)*, SNS, USA, 2016

*RMCPProfile tutorial (1/2 day)*, Tokyo, Japan, 2017

*US School on Total Scattering (5 Days)*, SNS, USA, 2017, 2018 & 2019

## **Publications**

Listed on the following pages

## Dr Matt Tucker publications, July 2020

(Current Google Scholar H-index=47 & Scopus H-index=41)

- [1] Guanqun Cai, Anthony E Phillips, David A Keen, **Tucker, Matthew G**, and Martin T Dove. Neutron scattering study of the orientational disorder in potassium cyanide. *Journal of Physics Communications*, 4(2):023001, 2020.
- [2] Zhengqiang Yang, Guanqun Cai, Craig L Bull, **Tucker, Matthew G**, Martin T Dove, Alexandra Friedrich, and Anthony E Phillips. Hydrogen-bond-mediated structural variation of metal guanidinium formate hybrid perovskites under pressure. *Philosophical Transactions of the Royal Society A*, 377(2149):20180227, 2019.
- [3] Yuanpeng Zhang, Marshall McDonnell, Stuart A Calder, and **Tucker, Matthew G**. Mechanistic insights into the superexchange-interaction-driven negative thermal expansion in  $\text{CuO}$ . *Journal of the American Chemical Society*, 141(15):6310–6317, 2019.
- [4] John P Sutter, Philip A Chater, Riccardo Signorato, Dean S Keeble, Michael R Hillman, **Tucker, Matthew G**, Simon G Alcock, Ioana-Theodora Nistea, and Heribert Wilhelm. 1 m long multilayer-coated deformable piezoelectric bimorph mirror for adjustable focusing of high-energy x-rays. *Optics express*, 27(11):16121–16142, 2019.
- [5] Raul I Palomares, Marshall T McDonnell, Li Yang, Tiankai Yao, Jennifer ES Szymanowski, Joerg Neuefeind, Ginger E Sigmon, Jie Lian, **Tucker, Matthew G**, Brian D Wirth, et al. Oxygen point defect accumulation in single-phase  $\text{UO}_{2+x}$ . *Physical Review Materials*, 3(5):053611, 2019.
- [6] Yuanpeng Zhang, Tanja Scholz, Richard Dronskowski, Marshall T McDonnell, and **Tucker, Matthew G**. Local magnetic cluster size identified by neutron total scattering in the site-diluted spin glass  $\text{Sn}_{1-x}\text{Fe}_4\text{Sn}_{1-x}$  ( $x=0.88$ ). *Physical Review B*, 100(1):014419, 2019.
- [7] Christopher J Ridley, Dominik Daisenberger, Craig W Wilson, Gavin BG Stenning, Gopinathan Sankar, Kevin S Knight, **Tucker, Matthew G**, Ronald I Smith, and Craig L Bull. High-pressure study of the elpasolite perovskite  $\text{La}_2\text{NiMnO}_6$ . *Inorganic chemistry*, 58(14):9016–9027, 2019.
- [8] Juan Du, Anthony E Phillips, Donna C Arnold, David A Keen, and volume=100 number=10 pages=104111 year=2019 publisher=American Physical Society **Tucker, Matthew G** and Dove, Martin T, journal=Physical Review B. Structural study of bismuth ferrite  $\text{BiFeO}_3$  by neutron total scattering and the reverse monte carlo method.
- [9] Yuanpeng Zhang, Marshall McDonnell, Wei Liu, and **Tucker, Matthew G**. Reverse monte carlo modeling for low-dimensional systems. *Journal of Applied Crystallography*, 52(5), 2019.
- [10] Bernadette R Cladek, S Michelle Everett, Marshall T McDonnell, **Tucker, Matthew G**, David J Keffer, and Claudia J Rawn. Molecular rotational dynamics in mixed  $\text{CH}_4\text{-CO}_2$  hydrates: Insights from molecular dynamics simulations. *The Journal of Physical Chemistry C*, 123(43):26251–26262, 2019.
- [11] RI Smith, S Hull, **Tucker, MG**, HY Playford, DJ McPhail, SP Waller, and ST Norberg. The upgraded polaris powder diffractometer at the ISIS neutron source. *Review of Scientific Instruments*, 90(11):115101, 2019.
- [12] Helen Y Playford, Thomas F Whale, Benjamin Murray, **Tucker, Matt G**, and Christoph G Salzmann. Analysis of stacking disorder in ice I using pair distribution functions. *Journal of Applied Crystallography*, 51(4), 2018.
- [13] Bernadette R Cladek, S Michelle Everett, Marshall T McDonnell, **Tucker, Matthew G**, David J Keffer, and Claudia J Rawn. Guest–host interactions in mixed  $\text{CH}_4\text{-CO}_2$  hydrates: Insights from molecular dynamics simulations. *The Journal of Physical Chemistry C*, 122(34):19575–19583, 2018.
- [14] Daniel Olds, Rebecca A Mills, Marshall T McDonnell, Jue Liu, Joshua R Kim, Matthew T Dunstan, Michael W Gaultois, S Michelle Everett, **Tucker, Matthew G**, and Katharine

- Page. A high temperature gas flow environment for neutron total scattering studies of complex materials. *Review of Scientific Instruments*, 89(9):092906, 2018.
- [15] S Calder, K An, R Boehler, CR Dela Cruz, MD Frontzek, M Guthrie, B Haberl, A Huq, SAJ Kimber, J Liu, et al. A suite-level review of the neutron powder diffraction instruments at oak ridge national laboratory. *Review of Scientific Instruments*, 89(9):092701, 2018.
- [16] Katharine Page, Bianca Haberl, Leighton Coates, and **Tucker, Matthew**. Preface: Special topic on advances in modern neutron diffraction at oak ridge national laboratory, 2018.
- [17] Joseph AM Paddison, Matthias J Gutmann, J Ross Stewart, **Tucker, Matthew G**, Martin T Dove, David A Keen, and Andrew L Goodwin. Magnetic structure of paramagnetic mno. *Physical Review B*, 97(1):014429, 2018.
- [18] Josefa Vidal Laveda, Beth Johnston, Gary W Paterson, Peter J Baker, **Tucker, Matthew G**, Helen Y Playford, Kirsten MØ Jensen, Simon JL Billinge, and Serena A Corr. Structure-property insights into nanostructured electrodes for li-ion batteries from local structural and diffusional probes. *Journal of Materials Chemistry A*, 6(1):127–137, 2018.
- [19] Peter MM Thygesen, Joseph AM Paddison, Ronghuan Zhang, Kevin A Beyer, Karena W Chapman, Helen Y Playford, **Tucker, Matthew G**, David A Keen, Michael A Hayward, and Andrew L Goodwin. Orbital dimer model for the spin-glass state in  $\gamma$  2 mo 2 o 7. *Physical review letters*, 118(6):067201, 2017.
- [20] Alistair R Overy, Arkadiy Simonov, Philip A Chater, **Tucker, Matthew G**, and Andrew L Goodwin. Phonon broadening from supercell lattice dynamics: Random and correlated disorder. *physica status solidi (b)*, 254(4), 2017.
- [21] Peter MM Thygesen, Callum A Young, Edward OR Beake, Fabio Denis Romero, Leigh D Connor, Thomas E Proffen, Anthony E Phillips, **Tucker, Matthew G**, Michael A Hayward, David A Keen, et al. Local structure study of the orbital order/disorder transition in lamno 3. *Physical Review B*, 95(17):174107, 2017.
- [22] Craig L Bull, Giles Flowitt-Hill, Stefano de Gironcoli, Emine Küçükbenli, Simon Parsons, Cong Huy Pham, Helen Y Playford, and **Tucker, Matthew G**.  $\zeta$ -glycine: insight into the mechanism of a polymorphic phase transition. *IUCrJ*, 4(5):569–574, 2017.
- [23] Stephen A Wells, Ka Ming Leung, Peter P Edwards, **Tucker, Matt G**, and Asel Sartbaeva. Defining the flexibility window in ordered aluminosilicate zeolites. *Royal Society open science*, 4(9):170757, 2017.
- [24] I Levin, V Krayzman, G Cibin, **Tucker, MG**, M Eremenko, K Chapman, and RL Paul. Coupling of emergent octahedral rotations to polarization in (k, na) nbo 3 ferroelectrics. *Scientific reports*, 7(1):15620, 2017.
- [25] E. O. R. Beake, **Tucker, M. G.**, M. T. Dove, and A. E. Phillips. Orientational disorder in adamantane and adamantanecarboxylic acid. *Chemphyschem*, 18(5):459–464, 2017.
- [26] B. P. de Laune, G. J. Rees, M. J. Whitaker, H. Y. Hah, C. E. Johnson, J. A. Johnson, D. E. Brown, **Tucker, M. G.**, T. C. Hansen, F. J. Berry, J. V. Hanna, and C. Greaves. Oxygen insertion reactions within the one-dimensional channels of phases related-to fesb2o4. *Inorganic Chemistry*, 56(1):594–607, 2017.
- [27] A. D. Fortes, F. Fernandez-Alonso, **Tucker, M.**, and I. G. Wood. Isothermal equation of state and high-pressure phase transitions of synthetic meridianiite (mgso4.11d(2)o) determined by neutron powder diffraction and quasielastic neutron spectroscopy. *Acta Crystallographica Section B-Structural Science Crystal Engineering and Materials*, 73:33–46, 2017.
- [28] A. R. Overy, A. Simonov, P. A. Chater, **Tucker, M. G.**, and A. L. Goodwin. Phonon broadening from supercell lattice dynamics: Random and correlated disorder. *Physica Status Solidi B-Basic Solid State Physics*, 254(4):7, 2017.
- [29] L. R. Owen, H. Y. Playford, H. J. Stone, and **Tucker, M. G.** Analysis of short-range order in cu3au using x-ray pair distribution functions. *Acta Materialia*, 125:15–26, 2017.
- [30] H. Y. Playford, **Tucker, M. G.**, and C. L. Bull. Neutron total scattering of crystalline materials in the gigapascal regime. *Journal of Applied Crystallography*, 50:87–95, 2017.

- [31] P. M. M. Thygesen, J. A. M. Paddison, R. H. Zhang, K. A. Beyer, K. W. Chapman, H. Y. Playford, **Tucker, M. G.**, D. A. Keen, M. A. Hayward, and A. L. Goodwin. Orbital dimer model for the spin-glass state in  $y_2\text{mo}_2\text{o}_7$ . *Physical Review Letters*, 118(6):6, 2017.
- [32] I Levin, V Krayzman, TA Vanderah, M Tomczyk, H Wu, **Tucker, MG**, HY Playford, JC Woicik, CL Dennis, and PM Vilarinho. Oxygen-storage behavior and local structure in ti-substituted  $\text{ymno}_3$ . *Journal of Solid State Chemistry*, 246:29–41, 2017.
- [33] LR Owen, EJ Pickering, HY Playford, HJ Stone, **Tucker, MG**, and NG Jones. An assessment of the lattice strain in the  $\text{crmnfeconi}$  high-entropy alloy. *Acta Materialia*, 122:11–18, 2017.
- [34] Alistair R Overy, Andrew B Cairns, Matthew J Cliffe, Arkadiy Simonov, **Tucker, Matthew G**, and Andrew L Goodwin. Design of crystal-like aperiodic solids with selective disorder-phonon coupling. *Nature communications*, 7, 2016.
- [35] Andrew B Cairns, Matthew J Cliffe, Joseph AM Paddison, Dominik Daisenberger, **Tucker, Matthew G**, François-Xavier Coudert, and Andrew L Goodwin. Encoding complexity within supramolecular analogues of frustrated magnets. *Nature chemistry*, 8(5):442–447, 2016.
- [36] Stevin S Pramana, Tom Baikie, Tao An, **Tucker, Matthew G**, Ji Wu, Martin K Schreyer, Fengxia Wei, Ryan D Bayliss, Christian L Kloc, Timothy J White, et al. Correlation of local structure and diffusion pathways in the modulated anisotropic oxide ion conductor  $\text{cenbo}_4$ . 25. *Journal of the American Chemical Society*, 138(4):1273–1279, 2016.
- [37] LR Owen, HY Playford, HJ Stone, and **Tucker, MG**. A new approach to the analysis of short-range order in alloys using total scattering. *Acta Materialia*, 115:155–166, 2016.
- [38] CL Bull, HY Playford, KS Knight, GBG Stenning, and **Tucker, MG**. Magnetic and structural phase diagram of the solid solution  $\text{laco}_x\text{mn}_{1-x}\text{o}_3$ . *Physical Review B*, 94(1):014102, 2016.
- [39] John P Sutter, Philip A Chater, Michael R Hillman, Dean S Keeble, **Tucker, Matt G**, and Heribert Wilhelm. Three-energy focusing laue monochromator for the diamond light source x-ray pair distribution function beamline i15-1. 1741:040005, 2016.
- [40] CL Bull, NP Funnell, **Tucker, MG**, S Hull, DJ Francis, and WG Marshall. Pearl: the high pressure neutron powder diffractometer at isis. *High Pressure Research*, pages 1–19, 2016.
- [41] Huw R Marchbank, Adam H Clark, Timothy I Hyde, Helen Y Playford, **Tucker, Matthew G**, David Thompsett, Janet M Fisher, Karena W Chapman, Kevin A Beyer, Manuel Monte, et al. Structure of nano-sized  $\text{ceo}_2$  materials: Combined scattering and spectroscopic investigations. *ChemPhysChem*, 17(21):3494–3503, 2016.
- [42] Lisa Timm, **Tucker, Matthew G**, David A Keen, Peter MM Thygesen, Paul J Saines, and Andrew L Goodwin. Exploration of antiferromagnetic  $\text{coo}$  and  $\text{nio}$  using reverse monte carlo total neutron scattering refinements. *Physica Scripta*, 91(11):114004, 2016.
- [43] Ines Collings, Maxim Bykov, Elena Bykova, **Tucker, Matthew G**, Sylvain Petitgirard, Michael Hanfland, Konstantin Glazyrin, Sander van Smaalen, Andrew Goodwin, Leonid Dubrovinsky, et al. Structural distortions in the high-pressure polar phases of ammonium metal formates. *CrystEngComm*, 2016.
- [44] Jasper Adamson, Timothy C Lucas, Andrew B Cairns, Nicholas P Funnell, **Tucker, Matthew G**, Annette K Kleppe, Joseph A Hriljac, and Andrew L Goodwin. Competing hydrostatic compression mechanisms in nickel cyanide. *Physica B: Condensed Matter*, 479:35–40, 2015.
- [45] Chris M. Ainsworth, Chun-Hai Wang, **Tucker, Matthew G.**, and John S. O. Evans. Synthesis, structural characterization, and physical properties of the new transition metal oxyselenide  $\text{ce}_2\text{o}_2\text{znse}_2$ . *Inorganic Chemistry*, 54(4):1563–1571, 2015.
- [46] Chun-Hai Wang, Chris M. Ainsworth, Dong-Yun Gui, Emma E. McCabe, **Tucker, Matthew G.**, Ivana R. Evans, and John S. O. Evans. Infinitely adaptive transition metal oxychalcogenides: The modulated structures of  $\text{ce}_2\text{o}_2\text{mnse}_2$  and  $(\text{ce}_{0.78}\text{la}_{0.22})_2\text{o}_2\text{mnse}_2$ . *Chemistry of Materials*, 27(8):3121–3134, 2015.
- [47] E. J. Wildman, **Tucker, M. G.**, and A. C. McLaughlin. A high pressure neutron study of colossal magnetoresistant  $\text{ndmna}_0.95\text{f}_0.05$ . *Journal of Physics-Condensed Matter*, 27(11), 2015.

- [48] Tapan Chatterji, Antonio M. dos Santos, Jamie J. Molaison, Thomas C. Hansen, Stefan Klotz, **Tucker, Mathew**, Kartik Samanta, and Tanusri Saha-Dasgupta. Anomalous breakdown of bloch's rule in the mott-hubbard insulator mnte2. *Physical Review B*, 91(10), 2015.
- [49] M. J. Cliffe, W. Wan, X. D. Zou, P. A. Chater, A. K. Kleppe, **Tucker, M. G.**, H. Wilhelm, N. P. Funnell, F. X. Coudert, and A. L. Goodwin. Correlated defect nanoregions in a metal-organic framework. *Nature Communications*, 5:8, 2014.
- [50] I. E. Collings, **Tucker, M. G.**, D. A. Keen, and A. L. Goodwin. Geometric switching of linear to area negative thermal expansion in uniaxial metal-organic frameworks. *Crystengcomm*, 16(17):3498–3506, 2014.
- [51] N. P. Funnell, Q. Wang, L. Connor, **Tucker, M. G.**, D. O'Hare, and A. L. Goodwin. Structural characterisation of a layered double hydroxide nanosheet. *Nanoscale*, 6(14):8032–8036, 2014.
- [52] S. A. Hodgson, J. Adamson, S. J. Hunt, M. J. Cliffe, A. B. Cairns, A. L. Thompson, **Tucker, M. G.**, N. P. Funnell, and A. L. Goodwin. Negative area compressibility in silver(i) tricyanomethanide. *Chemical Communications*, 50(40):5264–5266, 2014.
- [53] Christopher S. Knee, **Tucker, Matthew G.**, Pascal Manuel, Shengzhen Cai, Johan Bielecki, Lars Borjesson, and Sten G. Eriksson. High pressure crystal and magnetic phase transitions in multiferroic bi0.9la0.1feo3. *Chemistry of Materials*, 26(2):1180–1186, 2014.
- [54] I. Levin, V. Krayzman, **Tucker, M. G.**, and J. C. Woicik. Local structure underlying anomalous tetragonal distortions in bifeo3-pbtio3 ferroelectrics. *Applied Physics Letters*, 104(24):4, 2014.
- [55] H. Y. Playford, A. C. Hannon, **Tucker, M. G.**, D. M. Dawson, S. E. Ashbrook, R. J. Kastiban, J. Sloan, and R. I. Walton. Characterization of structural disorder in gamma-ga2o3. *Journal of Physical Chemistry C*, 118(29):16188–16198, 2014.
- [56] K. Wezka, A. Bouzid, K. J. Pizzey, P. S. Salmon, A. Zeidler, S. Klotz, H. E. Fischer, C. L. Bull, **Tucker, M. G.**, M. Boero, S. Le Roux, C. Tugene, and C. Massobrio. Density-driven defect-mediated network collapse of gese2 glass. *Physical Review B*, 90(5):9, 2014.
- [57] Robert J. Szczecinski, Samantha Y. Chong, Philip A. Chater, Helen Hughes, **Tucker, Matthew G.**, John B. Claridge, and Matthew J. Rosseinsky. Local crystal structure of antiferroelectric bi2mn4/3ni2/3o6 in commensurate and incommensurate phases described by pair distribution function (pdf) and reverse monte carlo (rmc) modeling. *Chemistry of Materials*, 26(7):2218–2232, 2014.
- [58] A. Zeidler, K. Wezka, R. F. Rowlands, D. A. J. Whittaker, P. S. Salmon, A. Polidori, J. W. E. Drewitt, S. Klotz, H. E. Fischer, M. C. Wilding, C. L. Bull, **Tucker, M. G.**, and M. Wilson. High-pressure transformation of sio2 glass from a tetrahedral to an octahedral network: A joint approach using neutron diffraction and molecular dynamics. *Physical Review Letters*, 113(13):5, 2014.
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- [60] Sarah E. Tallentire, Felicity Child, Ian Fall, Liana Vella-Zarb, Ivana Radosavljevic Evans, **Tucker, Matthew G.**, David A. Keen, Claire Wilson, and John S. O. Evans. Systematic and controllable negative, zero, and positive thermal expansion in cubic zr1-xsnxmo2o8. *Journal of the American Chemical Society*, 135(34):12849–12856, 2013.
- [61] Paul J. Saines, **Tucker, Matthew G.**, David A. Keen, Anthony K. Cheetham, and Andrew L. Goodwin. Coupling of the local defect and magnetic structure of wustite fe1-xo. *Physical Review B*, 88(13), 2013.
- [62] Helen Y. Playford, Alex C. Hannon, **Tucker, Matthew G.**, Martin R. Lees, and Richard I. Walton. Total neutron scattering investigation of the structure of a cobalt gallium oxide spinel prepared by solvothermal oxidation of gallium metal. *Journal of Physics-Condensed Matter*, 25(45), 2013.
- [63] Julia L. Payne, **Tucker, Matthew G.**, and Ivana Radosavljevic Evans. From fluorite to pyrochlore: Characterisation of local and average structure of neodymium zirconate, nd2zr2o7.

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- [64] Dean S. Keeble, Emma R. Barney, David A. Keen, **Tucker, Matthew G.**, Jens Kreisel, and Pam A. Thomas. Bifurcated polarization rotation in bismuth-based piezoelectrics. *Advanced Functional Materials*, 23(2):185–190, 2013.
- [65] E. L. Gromnitskaya, O. F. Yagafarov, A. G. Lyapin, V. V. Brazhkin, I. G. Wood, **Tucker, M. G.**, and A. D. Fortes. The high-pressure phase diagram of synthetic epsomite (mgso4 center dot 7h(2)o and mgso4 center dot 7d(2)o) from ultrasonic and neutron powder diffraction measurements. *Physics and Chemistry of Minerals*, 40(3):271–285, 2013.
- [66] Nicholas P. Funnell, Martin T. Dove, Andrew L. Goodwin, Simon Parsons, and **Tucker, Matthew G.** Local structure correlations in plastic cyclohexane—a reverse monte carlo study. *Journal of Physics-Condensed Matter*, 25(45), 2013.
- [67] Hong Fang, Anthony E. Phillips, Martin T. Dove, **Tucker, Matthew G.**, and Andrew L. Goodwin. Temperature-dependent pressure-induced softening in zn(cn)(2). *Physical Review B*, 88(14), 2013.
- [68] Ines E. Collings, Andrew B. Cairns, Amber L. Thompson, Julia E. Parker, Chiu C. Tang, **Tucker, Matthew G.**, Jadna Catafesta, Claire Levelut, Julien Haines, Vladimir Dmitriev, Philip Pattison, and Andrew L. Goodwin. Homologous critical behavior in the molecular frameworks zn(cn)(2) and cd(imidazolate)(2). *Journal of the American Chemical Society*, 135(20):7610–7620, 2013.
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- [73] A. D. Fortes, I. G. Wood, **Tucker, M. G.**, and W. G. Marshall. The p-v-t equation of state of d2o ice vi determined by neutron powder diffraction in the range 0 <math>j p <math>j 2.6 gpa and 120 <math>j t <math>j 330 k, and the isothermal equation of state of d2o ice vii from 2 to 7 gpa at room temperature. *Journal of Applied Crystallography*, 45:523–534, 2012.
- [74] Ines E. Collings, **Tucker, Matthew G.**, David A. Keen, and Andrew L. Goodwin. Static disorder and local structure in zinc(ii) isonicotinate, a quartzlike metal-organic framework. *Zeitschrift Fur Kristallographie*, 227(5):313–320, 2012.
- [75] G. M. Bhalerao, P. Hermet, J. Haines, O. Cambon, D. A. Keen, E. **Tucker, M. G.** and Buixaderas, and P. Simon. Dynamic disorder and the alpha-beta phase transition in quartz-type fepo4 at high temperature investigated by total neutron scattering, raman spectroscopy, and density functional theory. *Physical Review B*, 86(13), 2012.
- [76] Andrew B. Cairns, Amber L. Thompson, **Tucker, Matthew G.**, Julien Haines, and Andrew L. Goodwin. Rational design of materials with extreme negative compressibility: Selective soft-mode frustration in  $KMn[Ag(CN)_2]_3$ . *Journal of the American Chemical Society*, 134(10):4454–4456, 2012.
- [77] Samantha Y. Chong, Robert J. Szczecinski, Craig A. Bridges, **Tucker, Matthew G.**, John B. Claridge, and Matthew J. Rosseinsky. Local structure of a pure Bi A site polar perovskite

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