Dr Matt Tucker

Diffraction Group Leader, Neutron Sciences Directorate, One Bethel Valley Road, MS-6475, Oak Ridge, TN, 37831
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Current Employer: UT-Battelle

Employment and education

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

RMCProfile - Moving closer to complex modelling, ACA, USA, 2017

RMCProfile - 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)

RMCProfile - 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

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

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

RMCProfile - 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)

RMCProfile - 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

RMCProfile 1 day tutorial, RMC-5, Budapest, Hungary, 2013

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

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

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

RMCProfile workshop (2 Days), SNS, USA, 2016

RMCProfile 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 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 u o 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 s n x f e 4- x n (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 la2nimno6. *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 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 ch4–co2 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 ch4–co2 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 y 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**. ζ-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 y2mo2o7. *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 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 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 cenbo4. 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 laco x mn 1- x 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 ceo2 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 coo and 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 ce2o2znse2. *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 ce2o2mnse2 and (ce0.78la0.22)(2)o2mnse2. *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 ndmnaso0.95f0.05. *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.

[59] A. Zeidler, K. Wezka, D. A. J. Whittaker, P. S. Salmon, A. Baroni, S. Klotz, H. E. Fischer, M. C. Wilding, C. L. Bull, **Tucker, M. G.**, M. Salanne, G. Ferlat, and M. Micoulaut. Density-driven structural transformations in b2o3 glass. *Physical Review B*, 90(2):12, 2014.

[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.

Journal of Solid State Chemistry, 205:29–34, 2013.

[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.

[69] E. O. R. Beake, M. T. Dove, A. E. Phillips, D. A. Keen, **Tucker, M. G.**, A. L. Goodwin, T. D. Bennett, and A. K. Cheetham. Flexibility of zeolitic imidazolate framework structures studied by neutron total scattering and the reverse monte carlo method. *Journal of Physics-Condensed Matter*, 25(39), 2013.

[70] Callum A. Young, Edward Dixon, **Tucker, Matthew G.**, David A. Keen, Michael A. Hayward, and Andrew L. Goodwin. Reverse monte carlo study of apical cu-o bond distortions in yba2cu3o6.93. *Zeitschrift Fur Kristallographie*, 227(5):280–287, 2012.

[71] Martin Wilding, Malcolm Guthrie, Shinji Kohara, Craig L. Bull, Jaakko Akola, and **Tucker, Matt G.** The structure of mgo-sio2 glasses at elevated pressure. *Journal of Physics-Condensed Matter*, 24(22), 2012.

[72] Philip S. Salmon, James W. E. Drewitt, Dean A. J. Whittaker, Anita Zeidler, Kamil Wezka, Craig L. Bull, **Tucker, Matthew G.**, Martin C. Wilding, Malcolm Guthrie, and Dario Marrocchelli. Density-driven structural transformations in network forming glasses: a high-pressure neutron diffraction study of geo2 glass up to 17.5 gpa (vol 24, 415102, 2012). *Journal of Physics-Condensed Matter*, 24(43), 2012.

[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 ¡ p ¡ 2.6 gpa and 120 ¡ t ¡ 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

revealed by pair distribution function analysis and reverse monte carlo modeling: Correlated off-axis displacements in a rhombohedral material. *Journal of the American Chemical Society*, 134(13):5836–5849, 2012.

[78] Masaki Azuma, Wei-tin Chen, Hayato Seki, Michal Czapski, Smirnova Olga, Kengo Oka, Masaichiro Mizumaki, Tetsu Watanuki, Naoki Ishimatsu, Naomi Kawamura, Shintaro Ishiwata, **Tucker, Matthew G.**, Yuichi Shimakawa, and J. Paul Attfield. Colossal negative thermal expansion in $BiNiO_3$ induced by intermetallic charge transfer. *Nature Communications*, 2, 2011.

[79] O. Cambon, G. M. Bhalerao, D. Bourgogne, J. Haines, P. Hermet, D. A. Keen, and **Tucker, M. G.** Vibrational origin of the thermal stability in the high-performance piezoelectric material $GaAsO_4$. *Journal of the American Chemical Society*, 133(20):8048–8056, 2011.

[80] D. A. Keen, A. L. Goodwin, **Tucker, M. G.**, J. A. Hriljac, T. D. Bennett, M. T. Dove, A. K. Kleppe, A. P. Jephcoat, and M. Brunelli. Diffraction study of pressure-amorphized ZrW_2O_8 using in situ and recovered samples. *Physical Review B*, 83(6), 2011.

[81] I. Levin, **Tucker, M. G**., H. Wu, V. Provenzano, C. L. Dennis, S. Karimi, T. Comyn, T. Stevenson, R. I. Smith, and I. M. Reaney. Displacive phase transitions and magnetic structures in Nd-substituted $BiFeO_3$. *Chemistry of Materials*, 23(8):2166–2175, 2011.

[82] Alex Lindsay-Scott, Ian G. Wood, David P. Dobson, Lidunka Vocadlo, John P. Brodholt, Kevin S. Knight, **Tucker, Matthew G.**, and Takashi Taniguchi. Thermoelastic properties and crystal structure of $CaPto_3$ post-perovskite from 0 to 9 GPa and from 2 to 973 K. *Journal of Applied Crystallography*, 44:999–1016, 2011.

[83] James P. Minshull, Steffen Neumeier, **Tucker, Matthew G.**, and Howard J. Stone. A1-$L1_2$ structures in the Al-Co-Ni-Ti quaternary phase system. *Euro Superalloys 2010*, 278:399–404, 2011.

[84] Maurice C. D. Mourad, Mohamed Mokhtar, **Tucker, Matthew G.**, Emma R. Barney, Ronald I. Smith, Abdulrahaman O. Alyoubi, Sulaiman N. Basahel, Milo S. P. Shaffer, and Neal T. Skipper. Activation and local structural stability during the thermal decomposition of Mg/Al-hydrotalcite by total neutron scattering. *Journal of Materials Chemistry*, 21(39):15479–15485, 2011.

[85] S. T. Norberg, P. A. Thomas, and **Tucker, M. G.** A neutron total scattering study of local coordination in $KTiOPO_4$ from room temperature to 900 degrees C. *Journal of Physics-Condensed Matter*, 23(17), 2011.

[86] S. J. Hibble, G. B. Wood, E. J. Bilbe, A. H. Pohl, **Tucker, M. G.**, A. C. Hannon, and A. M. Chippindale. Structures and negative thermal expansion properties of the one-dimensional cyanides, CuCN, AgCN and AuCN. *Zeitschrift Fur Kristallographie*, 225(11):457–462, 2010.

[87] D. A. Keen, M. T. Dove, J. S. O. Evans, A. L. Goodwin, L. Peters, and M. G. Tucker. The hydrogen-bonding transition and isotope-dependent negative thermal expansion in $H_3Co(CN)_6$). *Journal of Physics-Condensed Matter*, 22(40), 2010.

[88] I. Levin, J. C. Woicik, A. Llobet, **Tucker, M. G.**, V. Krayzman, J. Pokorny, and I. M. Reaney. Displacive ordering transitions in perovskite-like $AgNb_{1/2}Ta_{1/2}O_3$. *Chemistry of Materials*, 22(17):4987–4995, 2010.

[89] D. Moser, D. J. Bull, J. S. Cowpe, D. L. Roach, D. K. Ross, D. Noreus, and **Tucker, M. G.** An in situ neutron diffraction measurement of the pressure-temperature evolution of a MgD_2:TiD_2 mixture. *High Pressure Research*, 30(4):643–652, 2010.

[90] D. E. Nanu, **Tucker, M. G.**, W. G. Haije, J. F. Vente, and A. J. Bottger. Atom configurations in Pd-Au and Pd-Au-D alloys: A neutron total scattering and reverse monte carlo study. *Acta Materialia*, 58(16):5502–5510, 2010.

[91] K. Oka, M. Azuma, W. T. Chen, H. Yusa, A. A. Belik, E. Takayama-Muromachi, M. Mizumaki, N. Ishimatsu, N. Hiraoka, M. Tsujimoto, **Tucker, M. G.**, J. P. Attfield, and Y. Shimakawa. Pressure-induced spin-state transition in $BiCoO_3$. *Journal of the American Chemical Society*, 132(27):9438–9443, 2010.

[92] T. D. Bennett, A. L. Goodwin, M. T. Dove, D. A. Keen, **Tucker, M. G.**, E. R. Barney, A. K. Soper, E. G. Bithell, J. C. Tan, and A. K. Cheetham. Structure and properties of an amorphous metal-organic framework. *Physical Review Letters*, 104(11), 2010.

[93] A. Wosylus, U. Schwarz, L. Akselrud, **Tucker, M. G.**, M. Hanfland, K. Rabia, C. Kuntscher, J. von Appen, R. Dronskowski, D. Rau, and R. Niewa. High-pressure phase transition and properties of Cu_3N: An experimental and theoretical study. *Zeitschrift Fur Anorganische Und Allgemeine Chemie*, 635(12):1959–1968, 2009.

[94] S. T. Norberg, **Tucker, M. G.**, and S. Hull. Bond valence sum: a new soft chemical constraint for RMCProfile. *Journal of Applied Crystallography*, 42:179–184, 2009.

[95] I. Levin, V. Krayzman, J. C. Woicik, J. Karapetrova, T. Proffen, **Tucker, M. G.**, and I. M. Reaney. Structural changes underlying the diffuse dielectric response in $AgNbO_3$. *Physical Review B*, 79, 2009.

[96] V. Krayzman, I. Levin, J. C. Woicik, T. Proffen, T. A. Vanderah, and **Tucker, M. G.** A combined fit of total scattering and extended x-ray absorption fine structure data for local-structure determination in crystalline materials. *Journal of Applied Crystallography*, 42:867–877, 2009.

[97] S. Hull, S. T. Norberg, **Tucker, M. G.**, S. G. Eriksson, C. E. Mohn, and S. Stolen. Neutron total scattering study of the delta and beta phases of Bi_2O_3. *Dalton Transactions*, 40:8737–8745, 2009.

[98] A. D. Fortes, I. G. Wood, L. Vocadlo, K. S. Knight, W. G. Marshall, **Tucker, M. G.**, and F. Fernandez-Alonso. Phase behaviour and thermoelastic properties of perdeuterated ammonia hydrate and ice polymorphs from 0 to 2 GPa. *Journal of Applied Crystallography*, 42:846–866, 2009.

[99] O. Cambon, J. Haines, M. Cambon, D. A. Keen, **Tucker, M. G.**, L. Chapon, N. K. Hansen, M. Souhassou, and F. Porcher. Effect of ga content on the instantaneous structure of $Al_{1-x}Ga_xPO_4$ solid solutions at high temperature. *Chemistry of Materials*, 21(2):237–246, 2009.

[100] I. G. Wood, L. Vocadlo, D. P. Dobson, G. D. Price, A. D. Fortes, F. J. Cooper, J. W. Neale, A. M. Walker, W. G. Marshall, **Tucker, M. G.**, D. J. Francis, H. J. Stone, and C. A. McCammon. Thermoelastic properties of magnesiowustite, $(Mg_{1-x}Fe_x)O$: determination of the anderson-gruneisen parameter by time-of-flight neutron powder diffraction at simultaneous high pressures and temperatures. *Journal of Applied Crystallography*, 41:886–896, 2008.

[101] M. Wilding, M. Guthrie, C. L. Bull, **Tucker, M. G.**, and P. F. McMillan. Feasibility of in situ neutron diffraction studies of non-crystalline silicates up to pressures of 25 GPa. *Journal of Physics-Condensed Matter*, 20(24), 2008.

[102] D. E. Nanu, W. J. Legerstee, S. W. H. Eijt, W. G. Haije, J. F. Vente, **Tucker, M. G.**, and A. J. Bottger. Insights into the relation between crystal structure and deuterium desorption characteristics of Pd-Au-D alloys. *Acta Materialia*, 56(20):6132–6140, 2008.

[103] A. J. Markvardsen, K. Shankland, W. I. F. David, J. C. Johnston, R. M. Ibberson, **Tucker, M.**, H. Nowell, and T. Griffin. ExtSym: a program to aid space-group determination from powder diffraction data. *Journal of Applied Crystallography*, 41:1177–1181, 2008.

[104] V. Krayzman, I. Levin, and **Tucker, M. G.** Simultaneous reverse monte carlo refinements of local structures in perovskite solid solutions using EXAFS and the total scattering pair-distribution function. *Journal of Applied Crystallography*, 41:705–714, 2008.

[105] A. L. Goodwin, D. A. Keen, and **Tucker, M. G.** Large negative linear compressibility of$Ag_3[Co(CN)_6]$. *Proceedings of the National Academy of Sciences of the United States of America*, 105(48):18708–18713, 2008.

[106] A. L. Goodwin, M. Calleja, M. J. Conterio, M. T. Dove, J. S. O. Evans, D. A. Keen, L. Peters, and **Tucker, M. G.** Colossal positive and negative thermal expansion in the framework material $Ag_3[Co(CN)_6]$. *Science*, 319:794–797, 2008.

[107] A. L. Goodwin, D. A. Keen, **Tucker, M. G.**, M. T. Dove, L. Peters, and J. S. O. Evans.

Argentophilicity-dependent colossal thermal expansion in extended prussian blue analogues. *Journal of the American Chemical Society*, 130(30):9660–+, 2008.

[108] M. J. Conterio, A. L. Goodwin, **Tucker, M. G.**, D. A. Keen, M. T. Dove, L. Peters, and J. S. O. Evans. Local structure in $Ag_3[Co(CN)_6]$: colossal thermal expansion, rigid unit modes and argentophilic interactions. *Journal of Physics-Condensed Matter*, 20(25), 2008.

[109] **Tucker, M. G.**, D. A. Keen, M. T. Dove, A. L. Goodwin, and Q. Hui. RMCProfile: reverse monte carlo for polycrystalline materials. *Journal of Physics-Condensed Matter*, 19(33):16, 2007.

[110] **Tucker, M. G.**, D. A. Keen, J. S. O. Evans, and M. T. Dove. Local structure in ZrW_2O_8 from neutron total scattering. *Journal of Physics-Condensed Matter*, 19(33):16, 2007.

[111] I. P. Swainson, **Tucker, M. G.**, D. J. Wilson, B. Winkler, and V. Milman. Pressure response of an organic-inorganic perovskite: Methylammonium lead bromide. *Chemistry of Materials*, 19(10):2401–2405, 2007.

[112] D. P. Kozlenko, N. O. Golosova, Z. Jirak, L. S. Dubrovinsky, B. N. Savenko, **Tucker, M. G.**, Y. Le Godec, and V. P. Glazkov. Temperature- and pressure-driven spin-state transitions in $LaCoO_3$. *Physical Review B*, 75(6):10, 2007.

[113] D. A. Keen, A. L. Goodwin, **Tucker, M. G.**, M. T. Dove, J. S. O. Evans, W. A. Crichton, and M. Brunelli. Structural description of pressure-induced amorphization in ZrW_2O_8. *Physical Review Letters*, 98(22):4, 2007.

[114] Q. Hui, M. T. Dove, **Tucker, M. G.**, S. A. T. Redfern, and D. A. Keen. Neutron total scattering and reverse monte carlo study of cation ordering in $Ca_xSr_{1-x}TiO_3$. *Journal of Physics-Condensed Matter*, 19(33):11, 2007.

[115] A. L. Goodwin, M. T. Dove, **Tucker, M. G.**, and D. A. Keen. MnO spin-wave dispersion curves from neutron powder diffraction. *Physical Review B*, 75(7):9, 2007.

[116] A. L. Goodwin, S. A. T. Redfern, M. T. Dove, D. A. Keen, and **Tucker, M. G.** Ferroelectric nanoscale domains and the 905 K phase transition in $SrSnO_3$: A neutron total-scattering study. *Physical Review B*, 76(17), 2007.

[117] A. D. Fortes, I. G. Wood, M. Alfredsson, L. Vocaldo, K. S. Knight, W. G. Marshall, **Tucker, M. G.**, and F. Fernandez-Alonso. The high-pressure phase diagram of ammonia dihydrate. *High Pressure Research*, 27(2):201–212, 2007.

[118] M. Azuma, S. Carlsson, J. Rodgers, **Tucker, M. G.**, M. Tsujimoto, S. Ishiwata, S. Isoda, Y. Shimakawa, M. Takano, and J. P. Attfield. Pressure-induced intermetallic valence transition in $BiNiO_3$. *Journal of the American Chemical Society*, 129(46):14433–14436, 2007.

[119] S. Lowitzer, B. Winkler, and **Tucker, M.** Thermoelastic behavior of graphite from in situ high-pressure high-temperature neutron diffraction. *Physical Review B*, 73(21):8, 2006.

[120] J. Haines, O. Cambon, N. Prudhomme, G. Fraysse, D. A. Keen, L. C. Chapon, and **Tucker, M. G.** High-temperature, structural disorder, phase transitions, and piezoelectric properties of $GaPO_4$. *Physical Review B*, 73(1):10, 2006.

[121] A. L. Goodwin, **Tucker, M. G.**, M. T. Dove, and D. A. Keen. Magnetic structure of MnO at 10 K from total neutron scattering data. *Physical Review Letters*, 96(4):4, 2006.

[122] A. L. Goodwin, **Tucker, M. G.**, E. R. Cope, M. T. Dove, and D. A. Keen. Dynamics from diffraction. *Physica B-Condensed Matter*, 385:285–287, 2006.

[123] **Tucker, M. G.**, D. A. Keen, M. T. Dove, and K. Trachenko. Refinement of the Si-O-Si bond angle distribution in vitreous silica. *Journal of Physics-Condensed Matter*, 17(5):S67–S75, 2005.

[124] **Tucker, M. G.**, A. L. Goodwin, M. T. Dove, D. A. Keen, S. A. Wells, and J. S. O. Evans. Negative thermal expansion in ZrW_2O_8: Mechanisms, rigid unit modes, and neutron total scattering. *Physical Review Letters*, 95(25):4, 2005.

[125] H. J. Stone, **Tucker, M. G.**, F. M. Meducin, M. T. Dove, S. A. T. Redfern, Y. Le Godec, and W. G. Marshall. Temperature measurement in a Paris-Edinburgh cell by neutron resonance spectroscopy. *Journal of Applied Physics*, 98(6):10, 2005.

[126] H. J. Stone, **Tucker, M. G.**, Y. Le Godec, F. M. Meducin, E. R. Cope, S. A. Hayward, G. P. J. Ferlat, W. G. Marshall, S. Manolopoulos, S. A. T. Redfern, and M. T. Dove. Remote determination of sample temperature by neutron resonance spectroscopy. *Nuclear Instruments & Methods in Physics Research Section a-Accelerators Spectrometers Detectors and Associated Equipment*, 547(2-3):601–615, 2005.

[127] D. A. Keen, **Tucker, M. G.**, and M. T. Dove. Reverse monte carlo modelling of crystalline disorder. *Journal of Physics-Condensed Matter*, 17(5):S15–S22, 2005.

[128] Q. Hui, **Tucker, M. G.**, M. T. Dove, S. A. Wells, and D. A. Keen. Total scattering and reverse monte carlo study of the 105 K displacive phase transition in strontium titanate. *Journal of Physics-Condensed Matter*, 17(5):S111–S124, 2005.

[129] S. A. Hayward, S. A. T. Redfern, H. J. Stone, **Tucker, M. G.**, K. R. Whittle, and W. G. Marshall. Phase transitions in $BaTiO_3$: a high-pressure neutron diffraction study. *Zeitschrift Fur Kristallographie*, 220(8):735–739, 2005.

[130] A. L. Goodwin, **Tucker, M. G.**, E. R. Cope, M. T. Dove, and D. A. Keen. Model-independent extraction of dynamical information from powder diffraction data. *Physical Review B*, 72(21):15, 2005.

[131] M. T. Dove, M. Calleja, R. Bruin, J. Wakelin, **Tucker, M. G.**, G. J. Lewais, S. M. Hasan, V. N. Alexandrov, M. Keegan, S. Ballard, R. P. Tyer, I. Todorov, P. B. Wilson, M. Alfredsson, G. D. Price, C. Chapman, W. Emmerich, S. A. Wells, A. Marmier, S. C. Parker, and Z. Du. The eMinerals collaboratory: tools and experience. *Molecular Simulation*, 31(5):329–337, 2005.

[132] O. Cambon, J. Haines, G. Fraysse, D. A. Keen, and **Tucker, M. G.** Piezoelectric properties at high temperature in alpha-quartz materials. *Journal De Physique Iv*, 126:27–30, 2005.

[133] M. Calleja, R. Bruin, **Tucker, M. G.**, M. T. Dove, R. Tyer, L. Blanshard, K. K. van Dam, R. J. Allan, C. Chapmans, W. Emmerich, P. Wilson, J. Brodholt, A. Thandavan, and V. N. Alexandrov. Collaborative grid infrastructure for molecular simulations: The eminerals minigrid as a prototype integrated compute and data grid. *Molecular Simulation*, 31(5):303–313, 2005.

[134] S. Wells, M. Dove, and **Tucker, M.** Reverse monte carlo with geometric analysis - RMC+GA. *Journal of Applied Crystallography*, 37:536–544, 2004.

[135] F. Meducin, S. A. T. Redfern, Y. Le Godec, H. J. Stone, **Tucker, M. G.**, M. T. Dove, and W. G. Marshall. Study of cation order-disorder in mgal2o4 spinel by in situ neutron diffraction up 1600 K and 3.2 GPa. *American Mineralogist*, 89(7):981–986, 2004.

[136] A. L. Goodwin, **Tucker, M. G.**, M. T. Dove, and D. A. Keen. Phonons from powder diffraction: A quantitative model-independent evaluation. *Physical Review Letters*, 93(7):4, 2004.

[137] Y. Le Godec, M. T. Dove, S. A. T. Redfern, **Tucker, M. G.**, W. G. Marshall, G. Syfosse, and S. Klotz. Recent developments using the Paris-Edinburgh cell for neutron diffraction at high pressure and high temperature and some applications. *High Pressure Research*, 23(3):281–287, 2003.

[138] D. A. Keen, S. Hull, A. C. Barnes, P. Berastegui, W. A. Crichton, P. A. Madden, **Tucker, M. G.**, and M. Wilson. Nature of the superionic transition in Ag+ and Cu+ halides. *Physical Review B*, 68(1):11, 2003.

[139] S. A. Wells, M. T. Dove, **Tucker, M. G.**, and K. Trachenko. Real-space rigid-unit-mode analysis of dynamic disorder in quartz, cristobalite and amorphous silica. *Journal of Physics-Condensed Matter*, 14(18):4645–4657, 2002.

[140] S. A. Wells, M. T. Dove, and **Tucker, M. G.** Finding best-fit polyhedral rotations with geometric algebra. *Journal of Physics-Condensed Matter*, 14(17):4567–4584, 2002.

[141] **Tucker, M. G.**, M. T. Dove, and D. A. Keen. Total scattering and reverse monte carlo modelling of disordered crystalline materials. *From Semiconductors to Proteins: Beyond the Average Structure*, pages 85–103, 2002.

[142] J. Haines, O. Cambon, D. A. Keen, **Tucker, M. G.**, and M. T. Dove. Structural disorder and loss of piezoelectric properties in alpha-quartz at high temperature. *Applied Physics Letters*,

81(16):2968–2970, 2002.

[143] M. T. Dove, **Tucker, M. G.**, and D. A. Keen. Neutron total scattering method: simultaneous determination of long-range and short-range order in disordered materials. *European Journal of Mineralogy*, 14(2):331–348, 2002.

[144] **Tucker, M. G.**, M. T. Dove, and D. A. Keen. Mcgrtof: Monte carlo G(r) with resolution corrections for time-of-flight neutron diffractometers. *Journal of Applied Crystallography*, 34:780–782, 2001.

[145] **Tucker, M. G.**, M. P. Squires, M. T. Dove, and D. A. Keen. Dynamic structural disorder in cristobalite: neutron total scattering measurement and reverse Monte Carlo modelling. *Journal of Physics-Condensed Matter*, 13(3):403–423, 2001.

[146] **Tucker, M. G.**, M. T. Dove, and D. A. Keen. Application of the reverse Monte Carlo method to crystalline materials. *Journal of Applied Crystallography*, 34:630–638, 2001.

[147] **Tucker, M. G.**, D. A. Keen, and M. T. Dove. A detailed structural characterization of quartz on heating through the alpha-beta phase transition. *Mineralogical Magazine*, 65(4):489–507, 2001.

[148] Y. Le Godec, M. T. Dove, S. A. T. Redfern, **Tucker, M. G.**, W. G. Marshall, G. Syfosse, and J. M. Besson. A new high P-T cell for neutron diffraction up to 7 GPa and 2000 K with measurement of temperature by neutron radiography. *High Pressure Research*, 21(5):263–280, 2001.

[149] Y. Le Godec, M. T. Dove, D. J. Francis, S. C. Kohn, W. G. Marshall, A. R. Pawley, G. D. Price, S. A. T. Redfern, N. Rhodes, N. L. Ross, P. F. Schofield, E. Schooneveld, G. Syfosse, **Tucker, M. G.**, and M. D. Welch. Neutron diffraction at simultaneous high temperatures and pressures, with measurement of temperature by neutron radiography. *Mineralogical Magazine*, 65(6):737–748, 2001.

[150] A. V. Chadwick, G. Mountjoy, V. M. Nield, I. J. F. Poplett, M. E. Smith, J. H. Strange, and **Tucker, M. G.** Solid state NMR and X-ray studies of the structural evolution of nanocrystalline zirconia. *Chemistry of Materials*, 13(4):1219–1229, 2001.

[151] **Tucker, M. G.**, M. T. Dove, and D. A. Keen. Simultaneous analysis of changes in long-range and short-range structural order at the displacive phase transition in quartz. *Journal of Physics-Condensed Matter*, 12(48):L723–L730, 2000.

[152] **Tucker, M. G.**, M. T. Dove, and D. A. Keen. Direct measurement of the thermal expansion of the Si-O bond by neutron total scattering. *Journal of Physics-Condensed Matter*, 12(26):L425–L430, 2000.

[153] M. T. Dove, K. O. Trachenko, **Tucker, M. G.**, and D. A. Keen. *Rigid unit modes in framework structures: Theory, experiment and applications*, volume 39 of *Reviews in Mineralogy & Geochemistry*, pages 1–33. Mineralogical Soc America, Washington, 2000.

[154] M. T. Dove, M. S. Craig, D. A. Keen, W. G. Marshall, S. A. T. Redfern, K. O. Trachenko, and **Tucker, M. G.** Crystal structure of the high-pressure monoclinic phase-ii of cristobalite, SiO_2. *Mineralogical Magazine*, 64(3):569–576, 2000.

[155] V. M. Nield, R. L. McGreevy, and **Tucker, M. G.** Changes in the short-range order of gallium on melting and supercooling. *Journal of Physics-Condensed Matter*, 10(15):3293–3300, 1998.

[156] H. Griffiths, **Tucker, M. G.**, J. Sage, and W. G. HerrendenHarker. An electrical impedance tomography microscope. *Physiological Measurement*, 17:A15–A24, 1996.