

Graham M. King

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Education

Ph.D. Chemistry, March, 2010
The Ohio State University (Columbus, OH, USA)

B.S. Chemistry, February, 2005
State University of New York at Buffalo (Buffalo, NY, USA)

Professional Experience

Staff Scientist, Canadian Light Source 2018-present

Beamline scientist for the Brockhouse suite of instruments. Responsible for construction of the end stations, development of a user program, supervision of science associates, and conducting a personal research program.

Independent Research Consultant 2017

Worked as a self-employed contractor performing local structure analysis.

Staff Scientist, Los Alamos National Laboratory 2013-2016

Responsible for the operation of the HIPD neutron diffractometer and the science program of this instrument. Co-responsible for the NPDF instrument. Research topics include advanced powder crystallography, magnetic structure determination, and pair distribution function analysis. Managed several work-for-others contracts with industrial partners.

Postdoctoral Associate, Los Alamos National Laboratory 2010-2013
Mentor: Dr. Anna Llobet

Research efforts were mainly focused on the study of the local structures of inorganic extended solids using the pair distribution function method. Also worked in the areas of crystal and magnetic structure determination. Assisted in the operation of the HIPD and NPDF neutron diffractometers and Lujan Center user program. Supervised the research of an undergraduate summer student.

Graduate Associate, The Ohio State University 2005-2010
Advisor: Prof. Patrick M. Woodward

Main project involved the synthesis, structural, magnetic, and electronic characterization of new perovskite compounds which have ordering on both the *A* and *B*-cation sub-lattices for potential application as multiferroic materials. Methods include X-ray and neutron powder diffraction, SQUID magnetometry, UV-Vis diffuse reflectance spectroscopy, impedance spectroscopy, and differential scanning calorimetry. Other projects involved the *ab initio* structure determination of usually complex perovskites as well as molecular compounds from powder diffraction data. Supervised the research of three undergraduate students. Taught general chemistry courses for 10 quarters.

Undergraduate Research Assistant, SUNY Buffalo

2004-2005

Advisor: Prof. Philip Coppens

Projects involved crystal structure determination by single crystal X-ray diffraction including time resolved studies of photo-induced excited state molecular geometries, and the synthesis and crystal growth of coordination compounds.

Publications

Summary: 69 total papers, 20 as first author, 2050+ total citations, *h*-index 22

69) Zhang, W., Dong, M., Jiang, K., Yang, D., Tan, X., Zhai, S., Feng, R., Chen, N., King, G., Zhang, H., Zeng, H., Li, H., Antonietti, M., Zhi, Li., **Self-repairing interphase reconstructed in each cycle fro highly reversible aqueous zinc batteries.** *Nature Communications* (2022) In Press.

68) Ghosh, S., Wang, S., Singh, H., King, G., Xiong, Y., Zhou, T., Huttula, M., Komi, J., Cao, W. **Quantative prediction of yield strength of highly alloyed complex steel using high energy synchrotron X-ray diffractometry.** *J. Mater. Res. Technol.* (2022) **20**, 485-495.

67) Singh, H., Xiong, Y., Rani, E., Wang, S., Kharback, M., Zhou, T., Yao, H., Niu, Y., Zakharov, A., Zakharov, A., King, G., de Groot, F. M. F., Komi, J., Huttula, M., Cao, W. **Unveiling nano-scaled chemical inhomogeneity impacts on corrosion of Ce-modified 2507 super-duplex stainless steels.** *NPJ Materials Degradation* (2022) 6:54

66) Talebi, P., Kistanov, A. A., Rani, E., Singh, H, Pankratov, V., Pankratova, V., King, G., Huttula, M., Cao, W. **Unveiling the role of carbonate in nickel-based plasmonic core@shell hybrid nanostructure for photocatalytic water splitting.** *Applied Energy* (2022) **332**, 119461.

65) Chen, F.-Y., Wu, Z.-Y., Gupta, S., Rivera, D. J., Lambeets, S. V., Pecaut, S., Kim, J. Y. T., Finprock, Y. Z., Meira, D. M., King, G., Gao, G., Xu, W., Cullen, D. A., Zhou, H., Han, Yimo, Perea, D., E., Muhich, C. L., Wang, H., **Efficient conversion of low-concentration nitrate sources into ammonia on a Ru-dispersed Cu nanowire electrocatalyst.** *Nature Nanotechnology* (2022) DOI: 10.1038/s41565-022-01121-4

64) Wang, S., Rani, E., Gyakwaa, F., Singh, H., King, G., Shu, Q., Cao, W., Huttula, M., Fabritius, T. **Unveiling Non-isothermal Crystallization of CaO-Al₂O₃-B₂O₃-Na₂O-Li₂O-SiO₂ Glass via *In Situ* X-ray Scattering and Raman Spectroscopy.** *Inorg. Chem.* (2022) **61**, 7017-7025.

63) Jiang, Y., Deng, Y.-P., Liang, R., Chen, N., King, G., Yu, A., Chen, Z. **Linker-Compensated Metal-Organic Framework with Electron Delocalized Metal Sites for Bifunctional Oxygen Electrocatalysis.** *J. Am. Chem. Soc.* (2022) doi.org/10.1021/jacs.1c10295.

62) Bauer, R. P. C, Ravichandran, A., Tse, J. S., Appathurai, N., King, G., Moreno, B., Desgreniers, S., Sammynaiken, R., **In Situ X-ray Diffraction Study on Hydrate Formation at Low Temperature in High Vacuum.** *J. Phys. Chem. C.* (2021) **125**, 48, 26892-26900.

61) Garcia-Martin, S., King, G., Urones-Garrote, E., Woodward, P., **Coupled compositional and displacive modulations in KLaMnWO₆ revealed by atomic resolution imaging.** *J. Am. Chem. Soc.* (2021) 143, 19121-19127.

- 60) Wang, S., Kistanov, A. A., King, G., Ghosh, S., Singh, H., Pallaspuuro, S., Rahemtulla, A., Somani, M., Komi, J., Cao, W., Huttula, M., **In-Situ quantification and density functional theory elucidation of phase transformation in carbon steel during quenching and partitioning.** *Acta Materialia* (2021) **221**, 117361.
- 59) Dragomir, M., Arcon, I., Dube, P. A., Beam, J. A., Grosvenor, A. P., King, G., Greedan, J. E., **Family of anisotropic spin glasses $Ba_{1-x}La_{1+x}MnO_{4+\delta}$.** *Phys. Rev. Mater.* (2021) **5**, 074403.
- 58) Singh, H., Shu, Q., King, G., Liang, Z., Wang, Z., Cao, W., Huttula, M., Fabritius, T. **Structure and viscosity of $CaO-Al_2O_3-B_2O_3-BaO$ slags with varying mass ratio of BaO to CaO .** *J. Am. Ceram. Soc.* (2021) **104**, 4505-4517.
- 57) Xia, C., Qiu, Y., Xia, Y., Zhu, P., King, G., Zhang, X., Wu, Z., Kim, J.-Y., Cullen, D. A., Zheng, D., Li, P., Shakouri, M., Heredia, E., Cui, P., Alshareef, H. N., Hu, Y., Wang, H. **General synthesis of single-atom catalysts with high metal loading using graphene quantum dots.** *Nature Chemistry* (2021) **13**, 887-894.
- 56) Rakhmatullin, A., Molokeyev, M. S., King, G., Polovov, I. B., Maksimtsev, K. V., Chesneau, R., Suard, E., Bakirov, R., Simko, F., Bessada, C., Allix, M. **Polymorphs of Rb_3ScF_6 : X-ray and neutron diffraction, solid-state NMR, and DFT calculations study.** *Inorg. Chem.* (2021) **60**, 6016-6026.
- 55) Leontowich, A. F. G., Gomez, A., Diaz-Moreno, B., Muir, D., Spasyuk, D., King, G., Reid, J. W., Kim, C.-Y., Kycia, S. **The lower energy diffraction and scattering side-bounce beamline for materials science at the Canadian Light Source.** *J. Synchrotron Rad.* (2021) **28**, <https://doi.org/10.1107>.
- 54) Lozano-Gorrin, A. D., Wright, B., Dube, P. A., Marjerrison, C. A., Yuan, F., King, G., Ryan, D. H., Gonzalez-Silgo, C., Cranswick, L. M. D., Grosvenor, A. P., Greedan, J. E. **Magnetism in Mixed Valence Defect Cubic Perovskites: $BaIn_{1-x}Fe_xO_{2.5+\delta}$, $x = 0.25, 0.50, \text{ and } 0.75$. Local and Average Structures.** *ACS Omega* (2021) **6**, 6017-6029.
- 53) King, G., Celikin, M., Gomez, M. A., Becze, L., Petkov, V., Ventura, G. D. **Revealing the structures and relationships of $Ca(II)-Fe(III)-AsO_4$ minerals: arseniosiderite and yukonite.** *Environ. Sci. Nano.* (2020) **7**, 3631-3745. [selected as a hot (top 10%) paper by the editor and also selected for cover art]
- 52) Leukkunen, P. M., Rani, E., Devi, A. A. S., Singh, H., King, G., Alatalo M., Cao, W., Huttula, M., **Synergistic effect of $Ni-Ag$ -rutile TiO_2 ternary nanocomposite for efficient visible-light driven photocatalytic activity.** *RCS Adv.* (2020) **10**, 36930.
- 51) Wilson, C. E., Gibson, A. E., Argo, J. J., Loughney, P. A., Xu, W., King, G., Doan-Nguyen, V., **Accelerated microwave-assisted synthesis and in situ X-ray scattering of tungsten-substituted vanadium dioxide ($V_{1-x}W_xO_2$).** *J. Mater. Res.* (2020) 1-13.
- 50) King, G., **New Examples of Non-Cooperative Octahedral Tilting in a Double Perovskite: Phase Transitions in K_3GaF_6 .** *Acta. Cryst. B* (2020) B76, 789-794.
- 49) Patel, M., Zhong, J., Gomez-Haibach, K. S., Gomez, M., King, G., **Low-Energy $Sr_2MSbO_{5.5}$ structures show significant distortions near oxygen vacancies.** *Int. J. Quantum Chem.* (2020) 120, e26356.
- 48) King, G., Garcia-Martin, S., **Expanding the Doubly Cation Ordered $AA'BB'O_6$ Perovskite Family: Structural Complexity in $NaLaInNbO_6$ and $NaLaInTaO_6$.** *Inorg. Chem.* (2019) 58, 14058-14067.
- 47) Dragomir, M., Dube, P., Arcon, I., Boyer, C., Rutherford, M., Wiebe, C., King, G., Dabkowska, H., Greedan, J. E., **Comparing magnetism in isostructural oxides $A_{0.8}La_{1.2}MnO_{4.1}$. Long range order ($A = Sr$) versus an anisotropic spin glass ($A = Ba$).** *Chem. Mater.* (2019) 31, 7833-7844.

- 46) Beaux, M. F., Vodnik, D. R., Peterson, R. J., Bennett, B. L., Hubbard, K. M., Patterson, B. M., Goettee, J. D., Jurney, J. D., King, G. M., Smith, A. I., Tegtmeier, E. L., Luther, E. P., Dasari, V. R., Devlin, D. J., Usov, I. O., **Pyrolytic Carbon Coating Effects on Oxide and Carbide Kernels Intended for Nuclear Fuel Applications.** *Nuclear Technology* (2020) 206, 23-31.
- 45) Sarker, S., Isheim, D., King, G., An, Q., Chandra, D., Morozov, S. I., Page, K., Wermer, J. N., Seidman, D. N., Dolan, M., **Icosahedra clustering and short range order in Ni-Nb-Zr Amorphous Membranes.** *Scientific Reports*. (2018) 8:6084.
- 44) King, G., Soliz, J. R., Gordon, W. O., **Local Structure of Zr(OH)₄ and the Effect of Calcination Temperature from X-ray Pair Distribution Function Analysis.** *Inorg. Chem.* (2018) 57, 2797-2803.
- 43) Beaux, M. F., Vodnik, D. R., Peterson, R. J., Bennett, B. L., Salazar, J. J., Holesinger, T. G., King, G., Maloy, S. A., Devlin, D. J., Usov, I. O., **Chemical Vapor Deposition of Mo Tubes for Fuel Cladding Applications.** *Surf. Coat. Technol.* (2018) 337, 510-515.
- 42) Brown, D. W., Adams, D. P., Balogh, L., Carpenter, J. S., Clausen, B., King, G., Reedlunn, B., Palmer, T. A., Maguire, M. C., Vogel, S. C., **In-Situ Neutron Diffraction Study of the Influence of Microstructure on the Mechanical Response of Additively Manufactured 304L Stainless Steel.** *Metal. Matter. Trans A* (2017) 48, 6055-6069.
- 41) King, G., Avdeev, M., Qasim, I., Zhou, Q., Kennedy, B. J., **Multi-scale Structural Analysis of the A-site and Oxygen Deficient Perovskite Sr₁₁Mo₄O₂₃.** *Dalton Trans.* (2017) 46, 12466.
- 40) King, G., Thompson, C. M., Luo, K., Greedan, J. E., Hayward, M. A., **Identifying the Local Structural Units in La_{0.5}Ba_{0.5}MnO_{2.5} and BaY_{0.25}Fe_{0.75}O_{2.5} through the Neutron Pair Distribution Function.** *Dalton Trans.* (2017) 46, 1145.
- 39) Chen, C.-F., Brennecka, G. L., King, G., Tagmire, E. L., Holesinger, T., Ivy, J., Yang, P., **Processing of Crack-Free High Density Polycrystalline LiTaO₃ Ceramics.** *Journal of Materials Science: Materials in Electronics* (2017) 28(4), 3725-3732.
- 38) Duong, T. C., Hackenberg, R. E. Landa, A., Honarmandia, P. Talapatraa, A., Volz, H. M., Llobet, A., Smith, A. I., King, G., Gibbons, S., Bajaj, S., Ruban, A., Vitos, L., Turchi, P. E. A., Arroyave, R., **Revisiting Thermodynamic and Kinetic Diffusivities of Uranium - Niobium with Bayesian Uncertainty Analysis.** *Calphad* (2016) 55, 219-230.
- 37) Fujioka, Y., Frantti, J., Puretzky, A., King, G., **Raman Study of the Structural Distortion in the Ni_{1-x}Co_xTiO₃ Solid Solution.** *Inorg. Chem.* (2016) 55(18), 9436-9444.
- 36) Nakotte, H., Shrestha, M., Adak, S., Boerget, M., Zapf, V. S. Harrison, N., King, G., Daemen, L. L., **Magnetic Properties of some Transition-Metal Prussian Blue Analogs with Composition M₃[M'(C,N)₆]₂.xH₂O.** *Journal of Science: Adv. Mater. Devices* (2016) 1, 113-120.
- 35) Fujioka, Y., Frantti, J., Llobet, A., King, G., Ehrlich, S. N. **Structure and magnetic properties of triclinic Ni_{0.6}Co_{0.4}TiO₃ ilmenite oxide.** *Materials Today: Proceedings* (2016) 3, 265-276.
- 34) Chen, C.-F., Yang, P., King, G., Tegtmeier, E. E. **Processing of Transparent Polycrystalline AlON:Ce³⁺ Scintillators.** *J. Am. Ceram. Soc.* (2016) 99, 424-430.
- 33) Chen, C.-F., King, G., Dickerson, R. M., Papin, P. A., Kellogg, W. R., Wu, G. **Oxygen-Deficient BaTiO_{3-x} Perovskite as an Efficient Bifunctional Oxygen Electrocatalyst.** *Nano Energy.* (2015) 13, 423-432.

- 32) King, G., Ishida, K., Page, K., Fukuda, Y., Albessard, A. K., Hattori, Y., Hiramatsu, R., Mitsuishi, I., Okada, A., Kato, M., Fukushima, N. **Cation and Anion Ordering in Sr₂Si₇Al₃ON₁₃ Phosphors.** *J. Mater. Chem. C* (2015) 3, 3135.
- 31) King, G., Llobet, A., Garcia-Martin, S., **Magnetic Properties and Magnetic Structures of TbBaMn₂O_{5.75}: Possible Observation of Unconventional Polaron Trimers.** *Phys. Rev. B.* (2015) 91, 024412.
- 30) Larson, A. M., Moetakef, P., Gaskell, K., Brown, C. M., King, G., Rodriguez, E. E. **Inducing ferrimagnetism in insulating hollandite Ba_{1.2}Mn₈O₁₆.** *Chem. Mater.* (2015) 27, 515-525.
- 29) Zepeda-Alarcon, E., Nakotte, H., Gualtieri, A. F., King, G., Page, K., Vogel, S. C., Wang, H-W., Wenk, H-R., **Magnetic and nuclear structure of goethite (α -FeOOH): a neutron diffraction study.** *J. Appl. Crystallogr.* (2014) 47, 1983-1991.
- 28) Zhou, S., King, G., Scanlon, D. O., Sougrati, M. T., Melot, B. C., **Low Temperature Preparation and Electrochemical Properties of LiFeSi₂O₆.** *J. Electrochem. Soc.* (2014) 10, A1642-A1647.
- 27) Garcia-Martin, S., Urones-Garrote, E., King, G., Woodward, P. M., **Comment on “Frustrated Octahedral Tilting Distortion in the Incommensurately Modulated Li_{3x}Nd_{2/3-x}TiO₃ Perovskites”.** *Chem. Mater.* (2014) 26, 1286-1287.
- 26) Avila-Brandé, D., King, G., Urones-Garrote, E., Subakti, Llobet, A., Garcia-Martin, S., **Structural Determination and Imaging of Charge Ordering and Oxygen Vacancies of the Multifunctional Oxides REBaMn₂O_{6- δ} (RE = Gd, Tb).** *Adv. Funct. Mater.* (2014) 24, 2510-2517.
- 25) King, G., Thompson, C. M., Greedan, J. E., Llobet, A., **Local structure of the vacancy disordered fluorite Yb₃TaO₇.** *J. Mater. Chem A.* (2013) 1, 10487.
- 24) Chen, C.-F., Marksteiner, Q. R., King, G., Wynn, T. A., Treiman, M. B., Dalmás, D. A., Llobet, A., Haynes, W. B., Guidry, D. R., Papin, P. A., **Slip Casting of Sol-Gel Synthesized Barium Strontium Zirconium Titanate Ceramics.** *J. Mater. Sci.* (2013) 48, 5788-5800.
- 23) Tong, P., Louca, D., King, G., Llobet, A., Lin, J. C., Sun, Y. P., **Magnetic transition broadening and local lattice distortion in the negative thermal expansion antiperovskite Cu_{1-x}Sn_xNMn₃.** *Appl. Phys. Lett.* (2013) 102, 041908.
- 22) King, G., Ramezanipour, F., Llobet, A., Greedan, J. E., **Local Structures of Sr₂FeMnO_{5+y} (y = 0, 0.5) and Sr₂Fe_{1.5}Cr_{0.5}O₅ from Reverse Monte Carlo Modeling of Pair Distribution Function Data and Implications for Magnetic Order.** *J. Solid State Chem.* (2013) 198, 407-415.
- 21) King, G., Thomas, K. J., Llobet, A., **Drastic Differences between the Local and Average Structures of Sr₂MSbO_{5.5} (M = Ca, Sr, Ba) Oxygen Deficient Double Perovskites.** *Inorg. Chem.* (2012) 51, 13060-13068.
- 20) Ramezanipour, F., Greedan, J. E., Cranswick, L. M. D., Garlea, V. O., Siewenie J., King, G., Llobet, A., Donaberger, R. L., **The effect of the B-site cation and oxygen stoichiometry on the local and average crystal and magnetic structures of Sr₂Fe_{1.9}M_{0.1}O_{5+y} (M = Mn, Cr, Co; y = 0, 0.5).** *J. Mater. Chem.* (2012) 22, 9522-9538.
- 19) Garcia-Martin, S., King, G., Nenert, G., Ritter, C., Woodward, P. M., **The Incommensurately Modulated Structures of the Perovskites NaCeMnWO₆ and NaPrMnWO₆.** *Inorg. Chem.* (2012) 51, 4007-4014.

- 18) Yisgedu, T. B., Huang, Z., Chen, X., Lingam, H. K., King, G., Woodward, P. M., Highley A., Maharrey, S., Behrens, R., Shore S. G., Zhao, J-C., **The Structural Characterization of $(\text{NH}_4)_2\text{B}_{10}\text{H}_{10}$ and Thermal Decomposition Studies of $(\text{NH}_4)_2\text{B}_{10}\text{H}_{10}$ and $(\text{NH}_4)_2\text{B}_{12}\text{H}_{12}$.** *Int. J. Hydrogen Energy.* (2012) 37, 4267-4273.
- 17) King, G., Abakumov, A. M., Woodward, P. M., Llobet, A., Tsirlin, A. A., Batuk, D., Antipov, E. V., **The High-Temperature Polymorphs of K_3AlF_6 .** *Inorg. Chem.* (2011) 50, 7792-7801.
- 16) Dachraoui, W., Yang, T., Liu, C., King, G., Hadermann, J., Van Tendeloo, G., Llobet, A., Greenblatt, M. **Short Range Layered A-site Ordering in Double Perovskites $\text{NaLaBB}'\text{O}_6$ ($B = \text{Mn, Fe}$; $B' = \text{Nb, Ta}$).** *Chem. Mater.* (2011) 23, 2398-2406.
- 15) King, G., Ricciardo R. A., Soliz, J. R., Woodward, P. M., Llobet A. **Linking Local Structure and Properties in Perovskites Containing Equal Concentrations of Manganese and Ruthenium.** *Phys. Rev. B.* (2011) 83, 134123.
- 14) Garcia-Martin, S., King, G., Urones-Garrote E., Nenert, G., Woodward, P. M. **Spontaneous Superlattice Formation in the Doubly Ordered Perovskite KLaMnWO_6 .** *Chem. Mater.* (2011) 23, 163-170.
- 13) Huang, Z. G., King, G., Chen, X. N., Hoy, J., Yisgedu, T., Lingam, H. K., Shore S. G., Woodward, P. M., Zhao, J. C. **A Simple and Efficient Way to Synthesize Unsolvated Sodium Octahydrotriborate.** *Inorg. Chem.* (2010) 49, 8185-8187.
- 12) King, G., Woodward, P. M. **Cation Ordering in Perovskites.** *J. Mater. Chem.* (2010) 20, 5785-5796.
- 11) King, G., Abakumov, A. M., Hadermann, J., Alekseeva, A. M., Rozova, M. G., Perkisas, T., Woodward, P. M., Van Tendeloo, G., Antipov, E. V. **Crystal Structure and Phase Transitions in Sr_3WO_6 .** *Inorg. Chem.* (2010) 49, 6058-6065.
- 10) King, G., Garcia-Martin, S. Woodward, P. M., **Octahedral tilt twinning and compositional modulation in NaLaMgWO_6 .** *Acta Cryst. B.* (2009) 65, 676-683.
- 9) Abakumov, A. M., King, G., Laurinavichute, V. K., Rozova, M. G., Woodward, P. M., Antipov, A. V., **Crystal Structure of $\alpha\text{-K}_3\text{AlF}_6$: Elpasolites and Double Perovskites with Broken Corner-Sharing Connectivity of the Octahedral Framework.** *Inorg. Chem.* (2009) 48, 9336-9344.
- 8) King, G., Wills, A. S., Woodward, P. M. **Magnetic structures of NaLMnWO_6 perovskites ($L = \text{La, Nd, Tb}$).** *Phys. Rev. B.* (2009) 79, 224428.
- 7) King, G., Wayman, L. M., Woodward, P. M. **Magnetic and structural properties of NaLnMnWO_6 and NaLnMgWO_6 perovskites.** *J. Solid State Chem.* (2009) 182, 1319.
- 6) Garcia-Martin, S., Urones-Garrote E., Knapp, M. C., King, G., Woodward P. M. **Transmission Electron Microscopy Studies of NaLaMgWO_6 : Spontaneous Formation of Compositionally Modulated Stripes.** *J. Amer. Chem. Soc.* (2008) 130, 15028-37.
- 5) Spirig, J. V., Routbort, J. L., Singh, D., King, G., Woodward, P. M., Dutta, P. K. **Joining of highly aluminum-doped lanthanum strontium manganese oxide with tetragonal zirconia by plastic deformation.** *Solid State Ionics* (2008) 179, 550-557.
- 4) King, G., Thimmaiah, S., Dwivedi, A., Woodward, P. M. **Synthesis and Characterization of New $\text{AA}'\text{BWO}_6$ Perovskites Exhibiting Simultaneous Ordering of A-Site and B-Site Cations.** *Chem. Mater.* (2007) 19, 6451-6458.

- 3) Baddeley, C., Yan, Z., King, G., Woodward, P. M., Badjic, Y. D. **Structure-Function Studies of Modular Aromatics That Form Molecular Organogels.** *J. Org. Chem.* (2007) 72, 7270-7278.
- 2) Kovalevsky, A.Y., King, G., Bagley, K. A., Coppens, P. **Photoinduced Oxygen Transfer and Double-Linkage Isomerism in a *cis*-(NO)(NO₂) Transition-Metal Complex by Photocrystallography, FT-IR Spectroscopy and DFT Calculations.** *Chem. Eur. J.* (2005) 11, 7254-7264.
- 1) King, G., Gembicky, M., Coppens, P. **Two novel bis(2,9-dimethyl-1,10-phenanthroline)copper(I) complexes: [Cu(dmp)₂]₂(PF₆)₂·0.5(bpmh)·CH₃CN and [Cu(dmp)₂][N(CN)₂].** *Acta Cryst.* (2005). C61. m329-332.

Conference Presentations and Organizing Activity

King, G., **Diffraction and Pair Distribution Function using High Energy X-rays.** *Invited Talk* given at the Canadian Chemistry Conference, Calgary, AB, June 13-17, 2022.

King, G., Rakhmatullin, A., Allix, M., **Structures and Dynamics of Halide Double Perovskites with Non-Cooperative Octahedral Tilting,** North American Solid State Chemistry Conference, virtual, July 28-21, 2021.

King, G., Gomez, M., **Using Total Scattering to Reveal the Structures and Relationships of Arsenic Containing Minerals.** North American Solid State Chemistry Conference, Golden, CO, July 31st-Aug 22nd, 2019.

King, G., Moreno, B., Leontowich, A., Appathurai, N., Muir, D., Kycia, S., **New Opportunities for Materials Characterization at the Canadian Light Source.** Solid State Chemistry Gordon Research Conference, New London, NH, July 22-27, 2018.

King, G., Thompson, C. M., Luo, K., Greedan, J. E., Hayward, M. A., Avdeev, M., Qasim, I., Zhou, Q., Kennedy, B. J., **Identifying the Local Building Blocks in Disordered Oxygen Deficient Perovskites.** Canadian Chemistry Conference, Edmonton, AB, May 27-31, 2018.

Organized and chaired a session entitled **Local Structure and Complex Materials** at the 2015 American Crystallographic Association Annual Meeting, Philadelphia, PA, July 25-29.

King, G., Avila-Brandé, D., Urones-Garrote, E., Llobet, A., Garcia-Martin, S., **Discovery of Tripolaron Formation in TbBaMn₂O_{5.75}.** American Crystallographic Association Annual Meeting, Albuquerque, NM, May 24-28, 2014. Also organized and chaired a session entitled **Innovative Ways of Finding Atoms from Powder Diffraction Data.**

King, G., Thomas, K. J., Llobet, A., **Local Structures of Ionic Conducting Sr₂MSbO_{5.5} (M = Ca, Sr, Ba) Double Perovskites.** North American Solid State Chemistry Conference, Corvallis, Oregon, June 23-26, 2013.

King, G., Garcia-Martin, S., Urones-Garrote, E., Nenert, G., Woodward, P. M. **Complex Superstructures Resulting from Compositional Modulation and Octahedral Tilt Twinning in AA'BB'O₆ Doubly Cation Ordered Perovskites.** *Invited talk* given at IMAPS/ACerS 9th International Conference and Exhibition on Ceramic Interconnect and Ceramic Microsystems Technologies, Orlando, Florida, April 23-25, 2013.

King, G., Thomas, K. J., Llobet, A., **When the Average Structure is Insufficient as a Starting Model for Reverse Monte Carlo Modeling of Pair Distribution Function Data: The Case of Sr₂MSbO_{5.5} (M = Ca, Sr, Ba) Double Perovskites.** Workshop on Advanced Simulation Techniques for Total Scattering Data, Santa Fe, New Mexico, Oct. 16-19, 2012.

King, G., Llobet, A., Ricciardo, R., Soliz, J., Woodward, P. M., Ramezanipour, F., Greedan, J., **Reverse Monte Carlo Modeling of Pair Distribution Function Data as a Tool for Separating the Coordination Environments of Multiple Atoms Disordered Over a Single Site.** American Physical Society March Meeting, Boston, Massachusetts, Feb 27 - March 2, 2012.

King, G., Abakumov, A. M., Woodward, P. M., Antipov, E. V., Llobet, A. **Non-Cooperative Octahedral Tilting in the Double Perovskites Sr_3WO_6 and K_3AlF_6 .** North American Solid State Chemistry Conference, Hamilton, Ontario, Canada, June 1-4, 2011.

King, G., Abakumov, A. M., Woodward, P. M., Llobet, A. **Perovskites with Broken Corner Sharing Connectivity of the Octahedral Framework.** Materials Research Society Fall Meeting, Boston, Massachusetts, Nov. 29-Dec. 3, 2010.

King, G., Wills, A. S., Woodward, P. M. **Magnetic Structures of NaLnMnWO_6 Perovskites ($\text{Ln} = \text{La}, \text{Nd}, \text{Tb}$).** American Crystallographic Association Annual Meeting, Toronto, Ontario, Canada, July 24-30, 2009.

King, G., Wayman, L. M., Garcia-Martin, S., Wills, A. S., Woodward, P. M., **Structural and Magnetic Properties of Perovskites with Ordering of Both the A-site and B-site Cations.** North American Solid State Chemistry Conference, Columbus, OH, June 17-20, 2009.

King, G., Wayman, L. M., Wills, A. S., Woodward, P. M., **Structural and Magnetic Properties of Perovskites with Ordering of Both the A-Site and B-Site Cations.** 41st Central Regional Meeting of the American Chemical Society, Cleveland, OH, May 20-23, 2009.

King, G., Wayman, L., Wills, A. S., Woodward, P. M., **Complex Structural and Magnetic Ordering in $\text{AA}'\text{BB}'\text{O}_6$ Perovskites.** Materials Research Society Fall Meeting, Boston, Massachusetts, Dec. 1-5, 2008.

King, G., Wills, A. W., Woodward, P.M. **Magnetic Structures of NaLnMnWO_6 Perovskites with Ordering of the A-Site and B-Site Cations.** 2nd Workshop on Novel Electronic Materials, Lexington, Kentucky, May 15-17, 2008.

King, G., Woodward, P. M. **New Examples of A-site Cation Ordering in $\text{AA}'\text{MWO}_6$ Perovskites.** North American Solid State Chemistry Conference, College Station, Texas, May 17-19, 2007.

Special Skills

Structure solution of both extended and molecular solids of unusually high complexity from X-ray and neutron powder diffraction data.

Magnetism of inorganic solids, including the determination of magnetic structures from neutron powder diffraction data using representational analysis.

Local structure analysis using the pair distribution function (PDF) method. Particular specialization in large box Reverse Monte Carlo (RMC) modeling of PDF data.

Synthesis of novel inorganic compounds.

Expert in neutron and synchrotron X-ray powder diffraction instrumentation.

Workshops and Extended Research Visits

HERCULES one month course for users of large experimental facilities	2012
International Center for Materials Research (ICMR) student travel grant to Universidad Complutense de Madrid for collaborative research	2008
NSF Materials World Network funded travel to work in the crystal chemistry group at Moscow State University in Russia	2008
Workshop on Representational Analysis of Complex Magnetic Structures (at NIST)	2007
NSF funded undergraduate fellowship to travel to the University of Bratislava, Slovakia for collaborative research	2004

Committee Memberships and Reviewing Activity

Member of the Canadian Institute for Neutron Scattering Science Council	2022-present
Member of the Oak Ridge National Laboratory Neutron Scattering Science Proposal Review Committee	2014-present
Speaker and organizer for the Canadian Light Source Powder Diffraction Workshop	2022
Speaker and organizer for 13 th Canadian Powder Diffraction Workshop	2020
Served as an opponent for a doctoral examination for Aalto University	2020
Reviewer for 11-BM rapid access proposals at the Advanced Photon Source	2018-2019
Co-chair of the organizing committee and speaker/instructor for the 11 th LANSCE Neutron School	2014-2015
Served as an external examiner for a doctoral thesis for the University of Wollongong	2015

Served as a reviewer of over 250 articles for the following 30 journals: Nature Chemistry, Nature Materials, Physical Review Letters, Physical Review B, Chemistry of Materials, Journal of Materials Chemistry, Dalton Transactions (>50 reviews), Inorganic Chemistry, Journal of Solid State Chemistry (>100 reviews), Physical Chemistry Chemical Physics, ChemComm, European Journal of Inorganic Chemistry, Materials Research Bulletin, Solid State Communications, Physica Status Solidi, Physics and Chemistry of Minerals, Inorganica Chimica Acta, CrystEngComm, Journal of the American Ceramic Society, Journal of Applied Crystallography, Journal of Alloys and Compounds, Ionics, Materials Horizons, New Journal of Chemistry, Journal of Magnetism and Magnetic Materials, Acta Materialia, Mineralogical Magazine, International Journal of Ceramic Science and Engineering, Research SPJ, Nanomaterials