

**E. Andrew Payzant**  
Oak Ridge National Laboratory

**Education:**

University of Western Ontario, Canada	Materials Engineering	Ph.D., 1995
Tech University of NS, Halifax, Canada	Engineering Physics	M.A.Sc., 1989
Tech University of NS, Halifax, Canada	Engineering Physics	B.Eng., 1987
Dalhousie University, Halifax, Canada	Physics	B.Sc., 1984

**Research and Professional Experience:**

2013-present	Engineering Materials Group Leader, Chemical and Engineering Materials Division, ORNL
2012-present	Senior R&D Staff Member, Chemical and Engineering Materials Division, ORNL
2002-2012	Senior R&D Staff Member, Materials Science and Technology Division, ORNL
1997-2002	R&D Staff Member, Metals and Ceramics Division, ORNL
1995-1997	ORNL Postdoctoral Research Associate
1992-1994	Engineer, The Electrofuel Manufacturing Co., Ltd., Toronto, Canada
1989-1991	Research Assistant, Canadian University-Industry Consortium on Advanced Ceramics

**Professional Affiliations**

Member - ASM International (Chairman of Oak Ridge Chapter 2001- 02)  
Editorial Advisory Committee – *Advanced Materials and Processes* (2007 – 2012, chair 2011)  
Content Committee (2011); International Student Paper Contest Selection Committee (2013-present)  
Member - International Center for Diffraction Data  
Non-Ambient Diffraction Subcommittee Chair (2004 - present)  
Member – Neutron Scattering Society of America, ACA, MRS, AAAS  
Member – Los Alamos LANSCE Proposal Review Committee (2007 - 2014)  
Member – Argonne APS Proposal Review Committee (2015 - present)  
Associate Editor – *Journal of Nanomaterials* (2010 - present)

**Honors and Awards**

ORNL Significant Event Award (2013)  
USDOE Office of Science Outstanding Mentor Award (2009)  
Fellow, International Center for Diffraction Data (2006)  
ORNL Educational Programs Support Award (2005)  
HTML Staff Member of the Year (2002)  
UWO Materials Engineering Department Teaching Assistant Award (1993 and 1994)  
Ontario Graduate Scholar (1993)  
NSERC Postgraduate Scholar (1991)

**Selected Publications**

- L.N. Brewer, M.S. Bennett, B.W. Baker, E.A. Payzant, L.M. Sochalski-Kolbus, “Characterization of residual stress as a function of friction stir welding parameters in oxide dispersion strengthened (ODS) steel MA956,” accepted *Mater. Sci. Engin. A* (2015)
- D. Mohanty, A. Safa-Sefat, E.A. Payzant, D.L. Wood, III, C. Daniel, “Unconventional Irreversible Structural Changes in a High-Voltage Li-Mn-Rich Oxide for Lithium-Ion Battery Cathodes,” *J. Power Sources* **283**, 423-428 (2015)
- L.M. Sochalski-Kolbus, E.A. Payzant, P.A. Cornwell, T.R. Watkins, S.S. Babu, R.R. Dehoff, M. Lorentz, O. Ovchinnikova, C. Duty, “Comparison of residual stresses in Inconel 718 simple parts made by electron beam melting and direct laser metal sintering,” *Met. Mat. Trans. A* **46** [3], 1419-1432 (2015)
- D. Mohanty, J. Li, D.P. Abraham, A. Huq, A. Safa-Sefat, E.A. Payzant, D.L. Wood, III, C. Daniel, “Unraveling the voltage fade mechanism in layer Li-Mn-rich electrode: origin of the tetrahedral cations for spinel conversion,” *Chem. Mater.*, **26**, 6272-6280 (2014)
- N. Gallego, C. Contescu, H.M. Meyer, J.Y. Howe, R.A. Meisner, E.A. Payzant, M.J. Lance, S. Yoon, M. Denlinger, and D.L. Wood, “Advanced surface and microstructural characterization of natural graphite anodes for lithium ion batteries,” *Carbon* **72**[1], 393-401 (2014)

- D. Mohanty, A. Safa-Sefat, Jianlin Li, R.A. Meisner, A.J. Rondinone, E.A. Payzant, D.P. Abraham, D.L. Wood, III, C. Daniel, “Correlating cation ordering and voltage fade in a lithium- and manganese-rich layered-layered lithium-ion battery cathode oxide; a joint magnetic susceptibility and TEM study,” *Phys. Chem. Chem. Phys.*, **15**[44], 19496-19509 (2013)
- M.D. Gram, J.S. Carpenter, E.A. Payzant, A. Misra, P.M. Anderson, “X-ray diffraction studies of forward and reverse plastic flow in nanoscale layers during thermal cycling,” *Mater. Res. Lett.*, **1**[4], 233-243 (2013)
- D. Mohanty, A. Huq, E.A. Payzant, A. Safa-Sefat, Jianlin Li, D.P. Abraham, D.L. Wood, III, C. Daniel, “Neutron diffraction and magnetic susceptibility studies on a high-voltage  $\text{Li}_{1.2}\text{Mn}_{0.55}\text{Ni}_{0.15}\text{Co}_{0.10}\text{O}_2$  lithium-ion battery cathode; an insight to the crystal structure,” *Chem. Mater.*, **25**[20], 4064-4070 (2013)
- R.C. Bowman, Jr., E.A. Payzant, P. R. Wilson, D. P. Pearson, A. Ledovskikh, D. Danilov, P.H.L. Notten, K. An, H. D. Skorpenske, D. L. Wood, III, “Characterization and analyses of degradation and recovery of  $\text{LaNi}_{4.78}\text{Sn}_{0.22}$  hydrides following thermal aging,” *J. Alloys Compounds* **580**, S207-S210 (2013)
- S.M. Everett, C.J. Rawn, D.J. Keffer, D.L. Mull, E.A. Payzant, T.J. Phelps “Kinetics of methane hydrate decomposition studied via *in situ* low temperature x-ray powder diffraction,” *J. Phys. Chem. A* **117**, 3593-3598 (2013)
- D. Mohanty, A.S. Sefat, S. Kalnaus, Jianlin Li, R.A. Meisner, E.A. Payzant, D.P. Abraham, D.L. Wood, III, C. Daniel, “Investigating phase transformation in  $\text{Li}_{1.2}\text{Co}_{0.1}\text{Mn}_{0.55}\text{Ni}_{0.15}\text{O}_2$  lithium-ion battery cathode during high-voltage hold (4.5 V) via magnetic, x-ray diffraction and electron microscopy studies,” *J. Mater. Chem. A* **1**, 6249-6261 (2013)
- Y.H. Ma, C.H. Chen, J. Catalano, F. Guazzone, E.A. Payzant, “Synthesis, annealing, and performance of Pd-Au asymmetric composite membranes for hydrogen purification,” *Ind. Engr. Chem. Res.* **52**, 8732-8744 (2013)
- Kai Xiao, W. Deng, J.K. Keum, Mina Yoon, I.V. Vlasiouk, K.W. Clark, An-Ping Li, I.I. Kravchenko, G. Gu, E.A. Payzant, B.G. Sumpter, S.C. Smith, J.F. Browning, D.B. Geohegan, “Surface-induced orientation control of CuPc molecules for the epitaxial growth of highly ordered organic crystals on graphene,” *J. Am. Chem. Soc.* **135**, 3680-3687 (2013)
- R.D. Schmidt, E.D. Case, J.E. Ni, J.S. Sakamoto, R.M. Trejo, E. Lara-Curzio, E.A. Payzant, M.J. Kirkham, R.A. Peascoe-Meisner, “The temperature dependent coefficient of thermal expansion for p-type  $\text{Ce}_{0.9}\text{Fe}_{3.5}\text{Co}_{0.5}\text{Sb}_{12}$  and n-type  $\text{Co}_{0.95}\text{Pd}_{0.05}\text{Te}_{0.05}\text{Sb}_3$  skutterudite thermoelectric materials,” *Philos. Mag.*, **92**, 1261-1286 (2012)
- M.A. McLachlan, D.W. McComb, M.P. Ryan, A.N. Morozovska, E. Eliseev, E.A. Payzant, NS. Jesse, K. Seal, S.V. Kalinin, “Probing local and global ferroelectric phase stability and polarization switching in ordered macroporous PZT,” *Adv. Funct. Mater.*, **21**, 941-947 (2011)
- Chunmei Ban, Zheng Li, Zhuangchun Wu, M.J. Kirkham, Le Chen, Yoon Seok Jung, E.A. Payzant, Yanfa Yan, M.S. Whittingham, A.C. Dillon, “Extremely Durable High-Rate Capability of the  $\text{LiNi}_{0.4}\text{Mn}_{0.04}\text{Co}_{0.2}\text{O}_2$  Cathode Enabled with Single-Wall Carbon Nanotubes,” *Adv. Energy Mater.*, **1**, 58-62 (2011)

#### Patents:

*Low Temperature Proton Conducting Oxide*, T.R. Armstrong, E.A. Payzant, S.A. Speakman, M. Greenblatt, Patent # US 7,413,687

*Forming Gas Treatment of Lithium Ion Battery Anode Graphite Powders*, C.I. Contescu, N.C. Gallego, J.Y. Howe, H.M. Meyer, III, E.A. Payzant, D.L. Wood, III, S.Y. Yoon, M.R. Denlinger, U.S. Patent # US 8,834,829

#### Graduate and Postdoctoral Advisors:

Graduate Advisor: Hubert W. King, FRSA, The University of Western Ontario

Postdoctoral Advisor: Camden R. Hubbard, FASM, FACerS, Oak Ridge National Laboratory

#### Postdoctoral Scholars:

Scott A. Speakman (2002–2005), now at PANalytical, Inc.

Melanie J. Kirkham (2010–2012), now at ORNL Spallation Neutron Source

Lindsay M. Sochalsky-Kolbus (2013 – present)

Jeffrey R. Bunn (2014 – present)