

E. Andrew Payzant

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Education

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

Research Interests

Neutron and X-ray diffraction techniques, characterization of residual stress, solid-state crystallization and phase transformations, crystal structure, preferred orientation, microstructure, mechanical, and electronic properties of materials, ion-transport materials (particularly related to solid oxide fuel cell and gas separations applications), bulk metallic glasses, photovoltaics, and nanomaterials.

Professional Experience

2002-present	Senior R&D Staff Member, ORNL
1997-2002	R&D Staff Member, ORNL
1995-1997	ORNL Postdoctoral Research Associate
1992-1994	Engineer, The Electrofuel Manufacturing Co., Ltd., Toronto, Canada
1989-1991	Research Assistant, Tech. University of Nova Scotia

Professional Affiliations

Member - ASM International (Chairman of Oak Ridge Chapter 2001-02)
Editorial Committee – <i>Advanced Materials and Processes</i>
Member - International Center for Diffraction Data
Chair – Non-Ambient Diffraction Subcommittee
Member – Neutron Scattering Society of America, Materials Research Society, AAAS
Member – LANSCE Materials Program Advisory Committee (2007- present)
Associate Editor – <i>Journal of Nanomaterials</i>

Honors and Awards

ICDD Fellow (2006)
Ontario Graduate Scholar (1993)
NSERC Postgraduate Scholar (1991)

Selected Publications

(Author of more than 100 articles in refereed journals and books):

- “Metastable copper-phthalocyanine single-crystal nanowires and their use in fabricating high-performance field-effect transistors”, K. Xiao, R. Li, J. Tao, **E.A. Payzant**, I.N. Ivanov, A.A. Puretzky, W. Hu, D.B. Geohegan, *Adv. Funct. Mater.*, **19**, 3776-3780 (2009)
- “MOCVD of YSZ coatings using beta-diketonate precursors,” V.G. Varanasi, T.M. Besmann, R.L. Hyde, E.A. Payzant, T.J. Anderson, ”, *J. Alloys & Compounds*, **470**, 354-359 (2009).
- “Consecutive nucleation events during devitrification of Zr_{52.5}Cu_{17.9}Ni_{14.6}Al₁₀Ti₅ bulk metallic glass,” L. Yang, X.-L. Wang, W.D. Porter, Z.P. Lu, A.D. Stoica, E.A. Payzant, D. Shi, *Adv. Engin. Mater.*, **10**, 1043-1047 (2008).
- “An oxide ion and proton co-ion conducting Sn_{0.9}In_{0.1}P₂O₇ electrolyte for intermediate-temperature fuel cells,” X. Chen, C. Wang, E.A. Payzant, C. Xia, D. Chu, ”, *J. Electrochem. Soc.*, **155**, B1264-B1269 (2008).
- “Imaging Phase transitions in LaFeAsO: structural, magnetic, elastic, and transport properties, heat capacity and Mössbauer spectra,” M.A. McGuire, A.D. Christianson, A.S. Sefat, B.C. Sales, M.D. Lumsden, R. Jin, E.A. Payzant, D. Mandrus, Y. Luan, V. Keppens, V. Varadarajan, J.W. Brill, R.P. Hermann, M.T. Sougati, F. Grandjean, G.J. Long, *Phys. Rev. B*, **78**, 094517 (2008).
- “Synthesis, symmetry, and physical properties of cerium pyrophosphate,” A.K.M. White, P.L. Lee, P.J. Chupas, K.W. Chapman, E.A. Payzant, A.C. Jupe, W.A. Bassett, C.S. Zhu, A.P. Wilkinson, *Chem. Mater.*, **20**, 3728-3734 (2008).

- "Chapter 9: Other Topics", E.A. Payzant, in *Principles and Applications of Powder Diffraction* [A. Clearfield, J. Reibenspies, N. Bhuvanesh, eds.], Wiley-VCH (2008)
- "Development of novel polycrystalline ceramic scintillators," D.J. Wisniewski, L.A. Boatner, J.S. Neal, G.E. Jellison, J.O. Ramey, A. North, M. Wisniewska, E.A. Payzant, J.Y. Howe, A. Lempicki, C. Brecher, J. Glodo, *IEEE Trans. Nucl. Sci.*, **55**, 1501-1508 (2008).
- "Reaction kinetics of CuGaSe₂ formation from a GaSe/CuSe bilayer precursor film," W.K. Kim, E.A. Payzant, S. Kim, S.A. Speakman, T.J. Anderson, *J. Cryst. Growth*, **310**, 2987-2994 (2008).
- "Thermodynamic analysis and experimental growth of ZrO₂ by chloride CVD," V.G. Varanasi, T.M. Besmann, E.A. Payzant, T.J. Anderson, *Thin Solid Films*, **516**, 6133-6139 (2008).
- "Synthesis of RE(OH)₂Cl and REOCl (RE+Eu,Tb) nanostructures S. Mahajan, J. Hart, J. Hood, A. Everheart, M.L. Redigelo, D.S. Kotysh, E.A. Payzant, J.H. Dickerson,, *J. Rare Earths*, **26**, 131-135 (2008).
- "Isothermal nucleation and growth kinetics of Pd/Ag alloy phase via *in situ* time resolved high temperature X-ray diffraction (HTXRD) analysis," M.E. Ayturk, E.A. Payzant, S.A. Speakman, Y.H. Ma, *J. Membr. Sci.*, **316**, 96-111 (2008)
- "Three-dimensional magnetic correlations in multiferroic LuFe₂O₄," A.D. Christianson, M.D. Lumsden, M. Angst, Z. Yamani, W. Tian, R. Jin, E.A. Payzant, S.E. Nagler, B.C. Sales, D. Mandrus, *Phys. Rev. Lett.*, **100**, 107601 (2008).
- "*In situ* high pressure XRD study on hydrogen uptake behavior of Pd-Carbon systems," V.V. Bhat, N.C. Gallego, C.I. Contescu, E.A. Payzant, A.J. Rondinone, H. Tekinalp, D. Edie, in *Materials and Technology for Hydrogen Storage*, MRS Proceedings, vol.1042E, Materials Research Society, S07-03 (2008)
- "Creep-resistant Al₂O₃-forming austenitic stainless steels," Y. Yamamoto, M.P. Brady, Z.P. Lu, P.J. Maziasz, C.T. Liu, B.A. Pint, K.L. More, H.A. Meyer, and E.A. Payzant, *Science*, **316**, 433-436 (2007).
- "*In-situ* investigation on selenization kinetics of Cu-In precursor using time-resolved high temperature x-ray diffraction W.K. Kim, E.A. Payzant, S. Yoon, T.J. Anderson, *J. Cryst. Growth*, **294**, 231-235 (2006).
- "Formation of cadmium sulfide nanoparticles in reverse micelles: Extreme sensitivity to preparation procedure", C.E. Bunker, B.A. Harruff, P. Pathak, E.A. Payzant, L.F. Allard, and Y.P. Sun, *Langmuir* **20**, 5642-5644 (2004)
- "Mechanism of Nanocrystalline BaTiO₃ Particle Formation by Hydrothermal Refluxing Synthesis", X. Wang, B.I. Lee, M.Z.-C. Hu, E.A. Payzant, and D.A. Blom, *J. Mater. Sci: Materials in Electronics* **14**, 495-500 (2003)
- "Synthesis of Nanocrystalline BaTiO₃ by Solvent Refluxing Method", X. Wang, B.I. Lee, M.Z. Hu, E.A. Payzant, and D.A. Blom, *J. Mater. Sci. Lett.* **22**, 557-559 (2003)
- "Grain growth in nanocrystalline yttrium-stabilized-zirconia thin films synthesized by spin coating of polymeric precursors", J. Dong, M.Z.-C. Hu, E.A. Payzant, T.R. Armstrong, and P.F. Becher, *J. Nanosci. Nanotechnol.* **2**, 161-169 (2002)

Patents and Patent Applications

Method for Synthesizing Zeolite Membranes, J. Dong. M.Z. Hu, and E.A. Payzant, Patent Application # US 2003/0228969A1

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

Solid Oxide Fuel Cell Cathode Material, T.R. Armstrong, S.A. Speakman, E.A. Payzant, Patent Application # US 2007/0207373

Collaborations Outside ORNL During Past Five Years: T.J. Anderson, University of Florida; J.H. Dong, University of Cincinnati; J.H. Edgar, Kansas State University; K.T. Hartwig, Texas A&M University; P.K. Liaw, University of Tennessee; Y.H. (Ed) Ma, Worcester Polytechnical Institute; S.A. Speakman, MIT; Chunsheng Wang, University of Maryland; D. Way, Colorado School of Mines; A.P. Wilkinson, Georgia Tech

Graduate and Postdoctoral Advisors:

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

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

Postdoctoral-Scholar Sponsor:

Scott A. Speakman (2002–2005), now at MIT Center for Materials Science and Engineering
Melanie J. Kirkham (2010–present)

E. A. PAYZANT – full publication list 1/1/2012

Refereed Journals

124. 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 Ce_{0.9}Fe_{3.5}Co_{0.5}Sb₁₂ and n-type Co_{0.95}Pd_{0.05}Te_{0.05}Sb₃ skutterudite thermoelectric materials," accepted *Phil. Mag.*, TPHM-11-Jul-0267
123. Zhenzhong Sun, Kai Xiao, Jong Kahk Keum, Xiang Yu, Kunlun Hong, J. Browning, I.N. Ivanov, J. Chen, J. Alongo, D. Li, B.G. Sumpter, E.A. Payzant, C.M. Rouleau, D.B. Geohegan, "P3HT- \square -PS copolymers as P3HT/PCBM interfacial compatibilizers for high efficiency photovoltaics," *Adv. Mater.*, **23**, 5529-5535 (2011)
122. Chen-Nan Sun, M.C. Gupta, E.A. Payzant, "Effect of laser-sintering on Ti-ZrB₂ mixtures", *J. Amer. Ceram. Soc.*, **94**, 3282-3285 (2011)
121. W. Chen, C.J. Boehlert, J.Y. Howe, E.A. Payzant, "The elevated-temperature mechanical behavior of as-cast and wrought Ti-64-1B alloys", *Met. Mater. Trans. A*, **42A**, 3046-3061 (2011)
120. Nitin Kumar, E.A. Payzant, K. Jothimurugesan, J.J. Spivey, "Combined in situ XRD and in situ XANES studies on the reduction behavior of a rhenium promoted cobalt catalyst," *Phys. Chem. Chem. Phys.*, **13**, 14735-14741 (2011)
119. M.J. Kirkham, P. Majsztrik, E. Skoug, D. Morelli, Hsin Wang, W.D. Porter, E.A. Payzant, E. Lara-Curzio, "High-Temperature Order/Disorder Transition in the Thermoelectric Cu₃SbSe₃," *J. Mater. Res.*, **26**, 2001-2005 (2011)
118. J. Nag, E.A. Payzant, K.L. More, R.F. Haglund, Jr., "Enhanced performance of room-temperature-grown epitaxial thin films of vanadium dioxide," *Appl. Phys. Lett.*, **98**, 251916 (2011)
117. C.A. Bridges, A.S. Sefat, E.A. Payzant, L.D. Cranswick, M.P. Paranthaman, "Structure and Magnetic Order in the Series Bi_xRE_{1-x}Fe_{0.5}Mn_{0.5}O₃ (RE = La, Nd)," *J. Solid State Chem.*, **184**, 830-842 (2011)
116. C.M. McGilvery, D.W. McComb, S. De Gendt, E.A. Payzant, M. MacKenzie, A.J. Craven, "Characterization of hafnia powder prepared from an oxychloride sol-gel," *J. Amer. Ceram. Soc.*, **94**, 886-894 (2011)
115. M.A. McLachlan, D.W. McComb, M.P. Ryan, A.N. Morozovska, E. Eliseev, E.A. Payzant, N.S. 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)
114. J.C. Bauer, D. Mullins, Mei Jun Lie, Zili Wu, E.A. Payzant, S.H. Overbury, Sheng Dai, "Synthesis of silica-supported intermetallic AuCu nanoparticle catalyst for CO oxidation," *Phys. Chem. Chem. Phys.*, **13**, 2571-2581 (2011)
113. T.J. Toops, N.A. Ottinger, Chengdu Liang, J.A. Pihl, E.A. Payzant, "Impact of dopants on the sulfation, desulfation and NOx reduction performance of Ba-based NO_x storage reduction catalysts," *Catalysis Today*, **160**, 131-136 (2011)
112. C. Mossaad, M. Starr, E.A. Payzant, J.Y. Howe, R.E. Rimann, "Size-dependent crystalline to amorphous uphill phase transformation of hydroxyapatite nanoparticles," *Crystal Growth and Design*, **11**, 45-52 (2011)
111. 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 LiNi_{0.4}Mn_{0.04}Co_{0.2}O₂ Cathode Enabled with Single-Wall Carbon Nanotubes," *Adv. Energy Mater.*, **1**, 58-62 (2011)
110. V.G. Varanasi, T.M. Besmann, A. Payzant, B.A. Pint, J.L. Lothian, T.J. Anderson, "High-Growth Rate YSZ Thermal Barrier Coatings Deposited by MOCVD Demonstrate High Thermal Cycling Lifetime," *Mater. Sci. Engin. A* **528**, 978-985 (2011)
109. S.G. Sorenson, E.A. Payzant, W.T. Gibbons, B. Soydas, H. Kita, R.D. Noble, J.L. Falconer, "Influence of NaA Zeolite Crystal Expansion/Contraction on Zeolite Membrane Separations," *J. Membr. Sci.*, **366**, 413-420 (2011)
108. N. Pomerantz, E.A. Payzant, Y.H. Ma, "Isothermal solid-state transformation kinetics applied to Pd/Cu alloy membrane fabrication," *AIChE Journal*, **56**, 3062-3073 (2010)
107. J.B. Fox, P.J. Ambuchen, H.A. Stretz, R.A. Peascoe, E.A. Payzant, "Organic-montmorillonite barrier layers formed by combustion: nanostructure and permeability," *Appl. Clay Sci.*, **49**, 213-223 (2010)
106. S.G. Sorenson, E.A. Payzant, R.D. Noble, J.L. Falconer, "Influence of Crystal Expansion/Contraction on Zeolite Membrane Permeation," *J. Membr. Sci.*, **357**, 98-104 (2010)
105. S. Pathak, J. Kuebler, E.A. Payzant, N. Orlovskaya, "Mechanical behavior and electrical conductivity of La_{1-x}Ca_xCoO₃ (x = 0, 0.2, 0.4, 0.55) perovskites," *J. Power Sources*, **195**, 3612-3620 (2010)
104. W. Chen, C.J. Boehlert, E.A. Payzant, J.Y. Howe, "The effect of processing on the 455°C tensile and fatigue behavior of boron-modified Ti-6Al-4V," *Intl. J. Fatigue*, **32**, 627-638 (2010)
103. K. Xiao, R. Li, J. Tao, E.A. Payzant, I.N. Ivanov, A.A. Puretzky, W. Hu, D.B. Geohegan, "Metastable copper-phthalocyanine single-crystal nanowires and their use in fabricating high-performance field-effect transistors," *Adv. Funct. Mater.*, **19**, 3776-3780 (2009)
102. S.K. Gade, E.A. Payzant, H.J. Park, P.M. Thoen, J.D. Way, "The effects of fabrication and annealing on the structure and hydrogen permeation of Pd-Au binary alloy membranes," *J. Membr. Sci.*, **340**, 227-233 (2009)
101. S. Pathak, D. Steinmetz, J. Kuebler, E.A. Payzant, N. Orlovskaya, "Mechanical behavior of La_{0.8}Sr_{0.2}Ga_{0.8}Mg_{0.2}O₃ perovskites," *Ceram. Intl.*, **35**, 1235-1241 (2009)
100. V.G. Varanasi, T.M. Besmann, R.L. Hyde, E.A. Payzant, T.J. Anderson, "MOCVD of YSZ coatings using \square -diketonate precursors," *J. Alloys & Compounds*, **470**, 354-359 (2009)
99. L. Yang, X.-L. Wang, W.D. Porter, Z.P. Lu, A.D. Stoica, E.A. Payzant, D. Shi, "Consecutive nucleation events during devitrification of Zr_{52.5}Cu_{17.9}Ni_{14.6}Al₁₀Ti₅ bulk metallic glass," *Adv. Engin. Mater.*, **10**, 1043-1047 (2008)
98. X. Chen, C. Wang, E.A. Payzant, C. Xia, D. Chu, "An oxide ion and proton co-ion conducting Sn_{0.9}In_{0.1}P₂O₇ electrolyte for intermediate-temperature fuel cells", *J. Electrochem. Soc.*, **155**, B1264-B1269 (2008)

97. M.A. McGuire, A.D. Christianson, A.S. Sefat, B.C. Sales, M.D. Lumsden, R. Jin, E.A. Payzant, D. Mandrus, Y. Luan, V. Keppens, V. Varadarajan, J.W. Brill, R.P. Hermann, M.T. Sougat, F. Grandjean, G.J. Long, "Phase transitions in LaFeAsO: structural, magnetic, elastic, and transport properties, heat capacity and Mössbauer spectra", *Phys. Rev. B*, **78**, 094517 (2008)
96. M. Radovic, S.A. Speakman, L.F. Allard, E.A. Payzant, E. Lara-Curzio, W. Kriven, J. Lloyd, L. Fegely, N. Orlovskaya, "Thermal properties and structural stability of LaCoO₃ in reducing and oxidizing environments", *J. Power Sources*, **184**, 77-83 (2008)
95. K.M. White, P.L. Lee, P.J. Chupas, K.W. Chapman, E.A. Payzant, A.C. Jupe, W.A. Bassett, C.S. Zhu, A.P. Wilkinson, "Synthesis, symmetry, and physical properties of cerium pyrophosphate", *Chem. Mater.*, **20**, 3728-3734 (2008)
94. N. Orlovskaya, M. Lugovy, S. Pathak, D. Steinmetz, J. Lloyd, L. Fegely, M. Radovic, E.A. Payzant, E. Lara-Curzio, L.F. Allard, J. Kuebler, "Thermal and mechanical properties of LaCoO₃ and La_{0.8}Ca_{0.2}CoO₃ perovskites", *J. Power Sources*, **182**, 230-239 (2008)
93. A.C. Rizzie, T.R. Watkins, E.A. Payzant, "Elaboration on the hexagonal grid and spiral trace schemes for pole figure data collection", *Powder Diffraction*, **23**, 87-91 (2008)
92. D.J. Wisniewski, L.A. Boatner, J.S. Neal, G.E. Jellison, J.O. Ramey, A. North, M. Wisniewska, E.A. Payzant, J.Y. Howe, A. Lempicki, C. Brecher, J. Glodo, "Development of novel polycrystalline ceramic scintillators", *IEEE Trans. Nucl. Sci.*, **55**, 1501-1508 (2008)
91. W.K. Kim, E.A. Payzant, S. Kim, S.A. Speakman, T.J. Anderson, "Reaction kinetics of CuGaSe₂ formation from a GaSe/CuSe bilayer precursor film", *J. Cryst. Growth*, **310**, 2987-2994 (2008)
90. V.G. Varanasi, T.M. Besmann, E.A. Payzant, T.L. Starr, T.J. Anderson, "Thermodynamic analysis and experimental growth of ZrO₂ by chloride CVD", *Thin Solid Films*, **516**, 6133-6139 (2008)
89. S. Mahajan, J. Hart, J. Hood, A. Everheart, M.L. Redigelo, D.S. Kotysh, E.A. Payzant, J.H. Dickerson, "Synthesis of RE(OH)₂Cl and REOCl (RE=Eu,Tb) nanostructures", *J. Rare Earths*, **26**, 131-135 (2008)
88. M.E. Ayтурк, E.A. Payzant, S.A. Speakman, Y.H. Ma, "Isothermal nucleation and growth kinetics of Pd/Ag alloy phase via *in situ* time resolved high temperature X-ray diffraction (HTXRD) analysis", *J. Membr. Sci.*, **316**, 96-111 (2008)
87. A.D. Christianson, M.D. Lumsden, M. Angst, Z. Yamani, W. Tian, R. Jin, E.A. Payzant, S.E. Nagler, B.C. Sales, D. Mandrus, "Three-dimensional magnetic correlations in multiferroic LuFe₂O₄", *Phys. Rev. Lett.*, **100**, 107601 (2008)
86. B. Yang, M.P. Brady, H. Wang, J.A. Turner, K.L. More, D.J. Young, P.F. Tortorelli, E.A. Payzant, L.R. Walker, "Growth of protective Cr-nitride surfaces for stainless steel bipolar plates", *J. Power Sources*, **174**, 228-236 (2007)
85. L. Wu, G.M. Stoica, H.H. Liao, S.R. Agnew, E.A. Payzant, G. Wang, D. Fielden, L. Chen, P.K. Liaw, "Fatigue-property enhancement of magnesium alloy AZ31B through equal-channel angular pressing (ECAP)", *Metall. Mater. Trans. A*, **38**, 2283-2289 (2007)
84. W.K. Kim, E.A. Payzant, T.J. Anderson, "In-situ investigation of the selenization kinetics of Cu-Ga precursors using time-resolved high-temperature x-ray diffraction", *Thin Solid Films*, **515**, 5837-5842 (2007)
83. Y. Yamamoto, M.P. Brady, Z.P. Lu, P.J. Maziasz, C.T. Liu, B.A. Pint, K.L. More, H.A. Meyer, E.A. Payzant, "Creep-resistant Al₂O₃-forming austenitic stainless steels", *Science*, **316**, 433-436 (2007)
82. F. Guazzone, E.A. Payzant, S.A. Speakman, Y.H. Ma, "Microstrains and stresses analysis in electroless deposited thin Pd films", *Ind. Eng. Chem. Res.*, **45**, 8145-8153 (2006)
81. W.K. Kim, E.A. Payzant, S. Yoon, T.J. Anderson, "In-situ investigation on selenization kinetics of Cu-In precursor using time-resolved high temperature x-ray diffraction", *J. Cryst. Growth*, **294**, 231-235 (2006)
80. G.M. Stoica, E.A. Payzant, L. Wu, H.H. Liao, J.E. Spruiell, P.K. Liaw, "Development of the microstructure of severely plastically deformed Mg alloy, ZK60", *Adv. X-ray Analysis*, **39**, 116-121 (2006)
79. A. Khanna, D.G. Bhat, E.A. Payzant, "Growth and characterization of \square Cr₂O₃ thin films prepared by reactive AC magnetron sputtering", *J. Vac. Sci. Technol.*, **24**, 1870-1877 (2006)
78. X. Wang, B.I. Lee, M.Z.-C. Hu, E.A. Payzant, D.A. Blom, "Nanocrystalline BaTiO₃ powder via ambient conditions sol process", *J. Eur. Ceram. Soc.*, **26**, 2319-2326 (2006)
77. Z. Gu, L. Du, J.H. Edgar, E.A. Payzant, L.R. Walker, R. Liu, M.H. Engelhard, "Aluminum nitride – silicon carbide alloy crystals grown on SiC substrates by sublimation", *MRS Internet J. Nitride Semicond. Res.*, **10**, 5 (2005)
76. W.K. Kim, S. Kim, E.A. Payzant, S.A. Speakman, S. Yoon, R.M. Kaczynski, R.D. Acher, T.J. Anderson, O.D. Crisalle, S.S. Li, V. Craciun, "Reaction kinetics of \square CuInSe₂ formation from an In₂Se₃/CuSe bilayer precursor film", *J. Phys. Chem. Solids*, **66**, 1915-1919 (2005)
75. Y. Pan, J.H. Zhu, M.Z. Hu, E.A. Payzant, "Processing of YSZ thin films on dense and porous substrates", *Surf. Coat. Technol.*, **200**, 1242-1247 (2005)
74. M.P. Brady, P.F. Tortorelli, K.L. More, E.A. Payzant, B.L. Armstrong, H.T. Lin, M.J. Lance, F. Huang, M.L. Weaver, "Coating and near-surface modification design strategies for protective and functional surfaces," *Materials and Corrosion*, **56**, 748-755 (2005)
73. T. Aytug, M. Paranthaman, K.J. Leonard, H.Y. Zhai, M.S. Bhuiyan, E.A. Payzant, A. Goyal, S. Sathyamurthy, D.B. Beach, P.M. Martin, D.K. Christen, X. Li, T. Kodenkandath, U. Schoop, M.W. Rupich, "Assessment of chemical solution synthesis and properties of Gd₂Zr₂O₇ thin films as buffer layers for second generation high-temperature superconductor wires", *J. Mater. Res.*, **20**, 2988-2996 (2005)
72. T. Varga, A.P. Wilkinson, M.S. Haluska, E.A. Payzant, "Preparation and thermal expansion of (M^{III}_{0.5}M^V_{0.5})P₂O₇ with the cubic ZrP₂O₇ structure", *J. Sol. St. Chem.*, **178**, 3541-3546 (2005)
71. S. Sathyamurthy, M. Paranthaman, M.S. Bhuiyan, E.A. Payzant, D.F. Lee, A. Goyal, X. Li, T. Kodenkandath, U. Schoop, M. Rupich, "Solution deposition approach to high J_c coated conductor fabrication", *IEEE Trans. Appl. Supercond.*, **15**, 2974-2976 (2005)
70. M. Price, J. Dong, X. Gu, S.A. Speakman, E.A. Payzant, T.M. Nenoff, "Formation of YSZ-SDC solid solution in a nanocrystalline heterophase system and its effect on the electrical conductivity", *J. Am. Ceram. Soc.*, **88**, 1812-1818 (2005)
69. Z.G. Lu, J.H. Zhu, E.A. Payzant, and M. Paranthaman, "Electrical conductivity of manganese chromite spinel", *J. Am. Ceram. Soc.*, **88**, 1050-1053 (2005)
68. E.K. Akdogan, C.J. Rawn, W.D. Porter, E.A. Payzant, and A. Safari, "Size effects in PbTiO₃ nanocrystals: Effect of particle size on

- spontaneous polarization and strains", *J. Appl. Phys.* **97**, 084305 (2005)
67. S. Kim, W.K. Kim, E.A. Payzant, R. Acher, R. Kaczynski, S. Yoon, T.J. Anderson, O.D. Crisalle, and S.S. Li, "Reaction kinetics of CuInSe₂ thin films grown from bilayer InSe/CuSe precursors", *J. Vac. Sci. Technol. A* **23**, 310-315 (2005)
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