

Richard K. Brow Curators' Distinguished Professor, Materials Science & Engineering, Missouri
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Education

<u>Institution and Location</u>	<u>Degree</u>	<u>Date Conferred</u>	<u>Field of Study</u>
NYS College of Ceramics, Alfred University, Alfred, NY	B.S.	1980	Ceramic Engineering,
NYS College of Ceramics, Alfred University, Alfred, NY	M.S.	1982	Glass Science
Pennsylvania State University, University Park, PA	Ph.D.	1985	Ceramic Science

Professional Experience

1998-present: **Missouri University of Science and Technology**, Rolla, MO

- Curators' Distinguished Professor of Ceramic Engineering (1/05-present)
- Senior Investigator, Graduate Center for Materials Research (1/98-present)
- Research Investigator (1/08-present), Interim Director (7/18-6/19), Director (7/19-8/21), Center for Biomedical Research
- Executive Director of Operations, Kummer Institute (3/1/24-present)
- Special Assistant to the Provost for Academics (9/1/22-8/31/23)
- Interim Deputy Provost for Academic Excellence (7/1/19-8/31/22)
- Interim Vice Provost & Dean of the College of Engineering and Computing (7/1/16-7/31/17)
- Founding Department Chair, Materials Science & Engineering (7/04-12/06); Interim MSE Chair (11/15-3/16)
- Department Chair, Ceramic Engineering (1/01-6/04)

1985-1998: **Sandia National Laboratories**, Albuquerque, NM; Professional Member of the Technical Staff in the Ceramics Development Division.

1990-1996: **University of New Mexico**, Albuquerque, NM, Adjunct Professor, Chemical & Nuclear Engineering

Awards and Honors

- 2025: Named Fellow of the *National Academy of Inventors*; public announcement December 10, 2024; induction at the 14th NAI Annual Conference, June 23-26, 2025, Atlanta, GA.
- 2021: Elected to the *World Academy of Ceramics*, for "international renown significant contribution to the advancement of ceramics culture, science and technology", awarded at CIMTEC 2022, Montecatini Terme, Italy, June 21, 2022.
- 2021: Coulter Biomedical Accelerator award for Local, *Structural Scaffold to Stabilize Limb Muscle in Muscular Dystrophy*, University of Missouri School of Medicine; with Drs. Aaron Morton and Steve Segal.
- 2020: *Distinguished Life Membership*, the American Ceramic Society. The DLM Award is the highest honor accorded to members of ACerS and recognizes eminent contribution to the ceramic and glass profession.
- 2019: American Ceramic Society, Education and Professional Development Council's *Outstanding Educator Award* for 2019, to recognize truly outstanding work and creativity in teaching, in directing student research, and in the general education process of ceramic educators; ACerS Annual Meeting, Portland, OR, Sept. 30, 2019.
- 2016: *N.F. Mott Award*, the senior scientist award for outstanding contributions to the science of non-crystalline solids over many years, from the *Journal of Non-Crystalline Solids*
- 2010: *Presidential Award for Research and Creativity*, University of Missouri
- 2009: *Scholes Lecture* for "significant contributions to the field of glass science," Alfred University
- 2008: *American Competitiveness Initiative Fellowship*, National Science Foundation, for "his transformational research on glasses and his steady contribution to the mentoring and training of young women in materials science and engineering at both the undergraduate and graduate level."

- 2005 Greaves-Walker Roll of Honor Award, Keramos-National Institute of Ceramic Engineers, in appreciation of work as a mentor, scholar, and teacher.”
- 2005: Named ‘Curators’ Professor of Ceramic Engineering; this is the highest professorial rank in the University of Missouri system.
- 2005: Named Fellow of the Society of Glass Technology
- 2004: George W. Morey Award for ‘new and original work in the field of glass science and technology’; from the Glass & Optical Materials Division of the American Ceramic Society.
- 1997: Named Fellow of the American Ceramic Society
- 1996: First American recipient of the Gottardi Prize from the International Commission on Glass, for ‘outstanding contributions to the field of glass science’.
- 1996: R&D 100 Award from R&D Magazine for the development of hermetic sealing glasses for aluminum components, one of the ‘100 most technologically significant new products of the year’.
- 1994: Karl Schwartzwalder Professional Achievement in Ceramic Engineering Award from the American Ceramic Society, awarded annually to ‘the nation’s outstanding young ceramic engineer’.

Research Interests

Richard Brow and his students at Missouri S&T study the composition-structure-property relationships of oxide glasses and the use of glasses and related materials for a variety of engineering applications, including their use in electronic, optical, mechanical, chemical, and biomedical devices. His research has been funded by a variety of federal agencies, including the National Science Foundation, the National Institutes of Health, the Department of Energy, and the DOE National Labs, as well as industry. At Sandia, Prof. Brow was responsible for developing materials and processes for a variety of components used in command-and-control systems. He continues to consult with colleagues at Sandia, Los Alamos, and the Kansas City National Security Campus, on glass-related issues. He holds seventeen US patents, and four international patents, for materials used to make hermetic seals in electronic components and for biomedical materials, among other applications.

Publications/Refereed Journals

186. K. Mitsui, N. Nishioka, H. Takebe, A. Saitoh, R.K. Brow, “Degradation of radioactive waste encapsulation of BaO–FeO_x–P₂O₅ glass evaluated from electrical conductivity,” *J. Amer. Ceram. Soc.*, (2025);108:e20434 DOI: 10.1111/jace.20434.
185. K. A. Hageman, R. L. Blatt, W.A. Kuenne, R. K. Brow, and T. E. McIff, “Effect of pH and hydroxyapatite-like layer formation on the antibacterial properties of borophosphate bioactive glass incorporated poly(methyl methacrylate) bone cement,” *Front. Bioeng. Biotechnol.* 12:1462795 (2024). doi: 10.3389/fbioe.2024.1462795
184. U. Hoppe, P.T. Freudenberger, R.K. Brow, J. Bednarcik, and A.C. Hannon, “The atomic structure of Zn borophosphate glasses- a diffraction investigation,” *Solids*, 5, 355-374 (2024).
183. N.A. Abokefa, B.A. Bromet, R. Blatt, M.S. Pickett, R.K. Brow and J.A. Semon, “Adipose stem cell response to borophosphate bioactive glass,” special issue on *Functional Glasses and Composites: Recent Advances and Applications, Applied Sciences*, 14(9), 3906 (2024). <https://doi.org/10.3390/app14093906>.
182. N.P. Lower, Z. Tang, and R.K. Brow, “Inert Failure Strain Measurements of Sodium Borate Glass Fibers,” *Phys. Chem. Glasses: Eur. J Glass Sci. Tech. Part B*, 65[3] 65-70 (2024).
181. B. Bromet, N.P. Blackwell, N. Abokefa, P. Freudenberger, R. L. Blatt, R.K. Brow, and J.A. Semon, “The angiogenic potential of pH neutral borophosphate bioactive glasses,” *J. Biomedical Materials Research A*, 111, 1554-1564 (2023). <https://doi.org/10.1002/jbm.a.37553>
180. P.T. Freudenberger, R.L. Blatt, and R.K. Brow, Dissolution rates of borophosphate glasses in deionized water and in simulated body fluid,” *J. Non-Crystalline Solids: X* 18 100181 (2023). <https://doi.org/10.1016/j.nocx.2023.100181>
179. T. Shimizu, A. Saitoh, U. Hoppe, G. Tricot, and R. K. Brow, “A prediction of Young’s modulus for tin containing phosphate glasses using quantitative structural information,” *J. Non-Crystalline Solids*, 608, 122262 (2023).
178. P.T. Freudenberger, R.L. Blatt, R.E. Youngman, and R.K. Brow, “Network Structures and the Properties of Na-Ca-Sr-Borophosphate Glasses,” *Journal of Non-Crystalline Solids*, 600 121966 (2023). <https://doi.org/10.1016/j.jnoncrysol.2022.121966>

177. Y. Shen, JA Semon and R.K. Brow, "Conversion of Borate Glass Microspheres to Hollow Biphasic Calcium Phosphate Ceramic Microspheres for Bone Defects," *Journal of the American Ceramic Society* 2022;105:7211–7227; DOI: 10.1111/jace.18676.
176. J. Bai, R.K. Brow, CW Kim, P. Sandineni, and A. Choudhury, Redox effects on the structure and properties of Na-Mo-Fe-phosphate glasses, *Journal of Non-Crystalline Solids*, 557 120573 (2021); <https://doi.org/10.1016/j.jnoncrysol.2020.120573>.
175. R.K. Brow, C.W. Kim, and S.T. Reis, Iron Polyphosphate Glasses for Waste Immobilization, *Int. Journal of Applied Glass Science*, **11**, 4-14 (2020). DOI: 10.1111/ijag.13565.
174. U. Hoppe, R.K. Brow, A.C. Hannon, and M. von Zimmermann, "Structure of tin phosphate glasses by neutron and X-ray diffraction," *Journal of Non-Crystalline Solids*, X2 (2019) 100017 <https://doi.org/10.1016/j.nocx.2019.100017>.
173. T. Okamoto, A. Saitoh, P. Freudenberger, H. Takebe, and R.K. Brow, "The structure and properties of $x\text{ZnO}-(67-x)\text{SnO}-\text{P}_2\text{O}_5$ glasses: (IV) Mechanical properties", *Journal of Non-Crystalline Solids*, 513 44-48 (2019).
172. P. Freudenberger, A. Saitoh, H. Ikeda, Md. Shihab Adnan, H. Takebe, S. Nakane, CS Kim, and R.K. Brow, "Characterization of $20\text{Na}_2\text{O}\cdot 30((1-x)\text{CaO}\cdot x\text{SrO})\cdot 50\text{P}_2\text{O}_5$ Glasses for a Bio-resorbable Optical Fiber Application" *Int. Journal of Applied Glass Science*, **10** 378-390 (2019) <https://doi.org/10.1111/ijag.13106>.
171. J. Bai, J-H Hsu, P. Sandineni, C.W. Kim, and R.K. Brow, "The structure and properties of cesium loaded Mo-Fe-phosphate glasses," *Journal of Non-Crystalline Solids*, **510** 121-129 (2019).
170. J. Bai, J.H. Hsu, R.K. Brow, CW Kim, J. Szabo, and A. Zervos, "Structure and properties of Mo-Fe-phosphate glasses," *Phys. Chem Glasses: Eur. J. Glass Sci. Technol. B*, 60[2] 62-69 (2019).
169. J. Hernandez-Rueda, N.W. Troy, P. Freudenberger, R.K. Brow, and D.M. Krol, "Femtosecond laser-matter interactions in ternary zinc phosphate glasses," *Optical Materials Express*, 8[12] 3622-3634 (2018).
168. P. T. Freudenberger and R.K. Brow, "Spectroscopic and Chromatographic Analyses of Zinc Borophosphate Glasses," *European Journal of Glass Science and Technology B*, 59[6] 277-284 (2018).
167. L. Ma, R.K. Brow, and M.E. Schlesinger, "Dissolution behavior of Na-Ca-polyphosphate glasses," *Phys. Chem. Glasses: European Journal of Glass Science and Technology B*, 59[5] 205-212 (2018).
166. A. Saitoh, U. Hoppe, R.K. Brow, and H. Takebe, "The structure and properties of $x\text{ZnO}-(67-x)\text{SnO}-\text{P}_2\text{O}_5$ glasses: (III) Photoelastic behavior", *Journal of Non-Crystalline Solids*, 498 173-176 (2018).
165. U. Hoppe, A. Saitoh, G. Tricot, P. Freudenberger, A.C. Hannon, H. Takebe, and R.K. Brow, "The structure and properties of $x\text{ZnO}-(67-x)\text{SnO}-\text{P}_2\text{O}_5$ glasses: (II) Diffraction and spectroscopic studies", *Journal of Non-Crystalline Solids*, 492 68-76 (2018).
164. K.L. Goetschius, M.A. Beuerlein, C.M. Bischoff, and R.K. Brow, "Dissolution Behavior of Ternary Alkali-Alkaline Earth-Borate Glasses," *J. Non-Crystalline Solids*, 487[1] 12-18 (2018).
163. J-H Hsu, J. Bai, C.W. Kim, R.K. Brow, J. Szabo, and A. Zervos, The effects of crystallization and residual glass on the chemical durability of iron phosphate waste forms containing 40 wt.% of a high MoO_3 Collins-CLT waste," *Journal of Nuclear Materials*, **500** 373-380 (2018).
162. U. Hoppe, A. Saitoh, G. Tricot, A.C. Hannon, H. Takebe, and R.K. Brow, "The structure and properties of $x\text{ZnO}-(67-x)\text{SnO}-\text{P}_2\text{O}_5$ glasses: (I) Optical and thermal properties, Raman and infrared spectroscopies", *Journal of Non-Crystalline Solids*, 484 132-138 (2018).
161. X. Cheng, R. K. Brow, and G. Chen, "The dissolution behavior of phosphate-doped borosilicate glasses in alkaline solutions," *Journal of the American Ceramic Society*, 100(10) 4519-4532 (2017).
160. Q. Wang, R.K. Brow, H. Li and E.A. Ronchetto, "Effects of iron concentration and redox states on failure of boron-free E-glass fibers under applied stress in different conditions," *Bulletin of Materials Science*, **40**[4] 831-839 (2017).
159. K.T. Faber, T. Asefa, M. Backhaus-Ricoult, R. Brow, J. Chan, S. Dillon, W. Fahrenholtz, M.W. Finnis, J.E. Garay, E. Garcia, Y. Gogotsi, S.M. Haile, J. Halloran, J. Hu, L. Huang, S. Jacobsen, E. Lara-Curzio, J. LeBeau, W.E. Lee, C. G. Levi, I. Levin, J.A. Lewis, D.M. Lipkin, K. Lu, J. Luo, J-P. Maria, L.W. Martin, S. Martin, G. Messing, A. Navrotsky, N. Padture, C. Randall, G.S. Rohrer, A. Rozenflanz, T. Schaedler, D. Schlom, A. Sehirlioglu, A. Stevensen, T. Tani, V. Tikare, S. Trolrier-McKinstry, H. Wang and B. Yildiz, "The role of ceramic and glass science research in meeting societal challenges: A report from an NSF-sponsored workshop on emerging opportunities," *Journal of the American Ceramic Society*, 100[5] 1777-1803 (2017).

158. L. Ma, R.K. Brow, and M.E. Schlesinger, "Dissolution behavior of $\text{Na}_2\text{O}-\text{FeO}-\text{Fe}_2\text{O}_3-\text{P}_2\text{O}_5$ glasses," *J. Non-Crystalline Solids*, **463** 90-101 (2017).
157. A. Saitoh, N. Kitamura, L. Ma, P. Freudenberger, A. Choudhary, R.K. Brow, and H. Takebe, "Structural study of $\text{BaO}-\text{FeO}_x-\text{P}_2\text{O}_5$ glasses by Mössbauer spectroscopy and high performance liquid chromatography," *J. Non-Crystalline Solids*, 460 106-112 (2017).
156. S. Chen, Q. Yang, R.K. Brow, K. Liu, K.A. Brow, Y. Ma, and H. Shi, "In vitro stimulation of vascular endothelial growth factor by borate-based glass fibers," *Materials Science & Engineering C*, 73 447-455 (2017).
155. Q. Wang, R.K. Brow, H. Li and E.A. Ronchetto, "Effects of Aging Conditions on E-Glass Failure Strain and Dynamic Fatigue," *European Journal of Glass Science and Technology, A*, 57[2] 58-61 (2016).
154. J-H Hsu, C. M. Larson, J. W. Newkirk, R. K. Brow, and S-H Zhang, "The corrosion behavior of $\text{Ni}_3(\text{Si},\text{Nb})$ alloys in boiling 70 wt.% sulfuric acid," *Journal of Materials Engineering and Performance*, 25[2] 510-517 (2016).
153. F. Tang, G. Chen, and R.K. Brow, "Chloride-induced corrosion mechanism and rate of enamel- and epoxy-coated deformed steel bars in mortar," *Cement and Concrete Research*, **82** 58-73 (2016).
152. Q. Wang, R.K. Brow, H. Li and E.A. Ronchetto, "Effect of aging on the failure characteristics of E-glass fibers," *Journal of Materials Science*, 51[5], 2404-2410 (2016).
151. Z. Tang, N.P. Lower, P.K. Gupta, C.R. Kurkjian, and R.K. Brow, "Using the two-point bend technique to determine failure stress of pristine glass fibers," *J. Non-Cryst. Solids*, 428 98-104 (2015).
150. J.L. George and R.K. Brow, "In-situ characterization of borate glass dissolution kinetics by μ -Raman spectroscopy," *J. Non-Cryst. Solids*, 426 116-124 (2015).
149. S.R. Qiu, B.C. Wood, P.R. Ehrmann, S.G. Demos, P.E. Miller, K.I. Schaffers, T.I. Suratwala, and R.K. Brow, "Origins of optical absorption characteristics of Cu^{2+} complexes in aqueous solutions," *Phys. Chem. Chem. Phys.*, 17, 18913-18923 (2015); DOI: 10.1039/c5cp01688f.
148. A.L.B. Macon, T.B. Kim, E.M. Valliant, K. Goetschius, R.K. Brow, D.E. Day, A. Hoppe, A.R. Boccaccini, I.Y. Kim, C. Ohtsuki, T. Kokubo, A. Osaka, M. Vallet-Regi, D. Acres, L. Fraile, A.J. Sallnas, A.Y. Teixeira, Y. Vueva, R. M. Almeida, M. Miola, C. Vitale-Brovarone, E. Verne, W. Hoeland and J.R. Jones, "A unified in vitro evaluation for apatite-forming ability of bioactive glasses and their variants," *J. Mater.Sci: Materials in Medicine*, 26 115 (2015) DOI: 10.1007/s10856-015-5403-9.
147. L. Ma, R.K. Brow, L. Ghussn, and M.E. Schlesinger, "Thermal stability of $\text{Na}_2\text{O}-\text{FeO}-\text{Fe}_2\text{O}_3-\text{P}_2\text{O}_5$ glasses," *J. Non-Cryst. Solids*, **409** 131-138 (2015).
146. F. Tang, G. Chen, R. Brow and M. Koenigstein, "Corrosion Resistance of Sand Particles Modified Enamel Coating Applied to Smooth Steel Bars," *Materials*, **7**[9] 6632-6645 (2014). doi:10.3390/ma7096632
145. Jen-Hsien Hsu, Cheol-Woon Kim, Richard K. Brow, Joe Szabo, Ray Crouch, and Rob Baird, "An alkali-free barium borosilicate viscous sealing glass for solid oxide fuel cells," *Journal of Power Sources*, **270** 14-20 (2014).
144. L. Ma, R.K. Brow and A. Choudhary, "Structural study of $\text{Na}_2\text{O}-\text{FeO}-\text{Fe}_2\text{O}_3-\text{P}_2\text{O}_5$ glasses by Raman and Mössbauer spectroscopy," *Journal of Non-Crystalline Solids*, **402** 64-73 (2014).
143. Z. Tang and R.K. Brow, "Environmental Fatigue of Silicate Glasses in Humid Conditions," *International Journal of Applied Glass Science*, 5[3] 287-296 (2014).
142. L. Ghussn, R.C.V.M. Reis, R.K. Brow and D.B. Baker, "Color bleaching and oxygen diffusion in a niobium phosphate glass," *J. Non-Crystalline Solids*, **401**, 96-100 (2014).
141. J. George, C. Ryan and R.K. Brow, "Conversion of Eu- and La- doped sodium borate glass to rare-earth phosphate solid solution compounds," *J. Amer. Ceram. Soc.*, **97**[7] 2249-2255 (2014).
140. U. Hoppe, N.P. Wyckoff, R.K. Brow, M. von Zimmermann, and A.C. Hannon, "Structure of $\text{Na}_2\text{O}-\text{GeO}_2-\text{P}_2\text{O}_5$ glasses by X-ray and neutron diffraction," *Journal of Non-Crystalline Solids*, **390** 59-69 (2014).
139. C. E. Smith and R. K. Brow, "The properties and structure of zinc magnesium phosphate glasses," *Journal of Non-Crystalline Solids*, **390**, 51-58 (2014).
138. L. Ma and R.K. Brow, "Structural study of $\text{Na}_2\text{O}-\text{FeO}-\text{Fe}_2\text{O}_3-\text{P}_2\text{O}_5$ glasses by high-pressure liquid chromatography" *J. Non-Crystalline Solids*, **387** 16-20 (2014).
137. C.E. Smith, R.K. Brow, L. Montagne, and B. Revel, "The structure and properties of zinc aluminophosphate glasses," *J. Non-Crystalline Solids*, **386** 105-114 (2014).

136. J.-H. Hsu, C.-W. Kim and R.K. Brow, "Interfacial interactions between an alkali-free borosilicate viscous sealing glass and aluminized ferritic stainless steel," *Journal of Power Sources*, **250** 236-241 (2014).
135. J-H Hsu, J. W. Newkirk, C.W., R. K. Brow, M. E. Schlesinger, C. S. Ray, and D. E. Day, "The performance of Inconel 693 electrodes for processing an iron phosphate glass melt containing 26 wt-% of a simulated low activity waste," *Journal of Nuclear Materials*, **444** 323-330 (2014).
134. J-H Hsu, J. W. Newkirk, C.W. Kim, C.S. Ray, R.K. Brow, M.E. Schlesinger and D.E. Day, "Corrosion of Inconel 690 and Inconel 693 in an iron phosphate glass melt, *Corrosion Science*, **75** 148-157 (2013).
133. Wu, C., Chen, G., Volz, J.S., Brow, R.K., and Koenigstein, M.L., "Global Bond Behavior of Enamel-Coated Rebar in Concrete Beams with Spliced Reinforcement," *Construction & Building Materials*, **40** 793-801 (2013).
132. F. Tang, C. Chen, J.S. Volz, R.K. Brow and M. Koenigstein, "Cement-modified enamel coating for enhanced corrosion resistance of steel reinforcing bars," *Cement and Concrete Composites*, **35** 171-180 (2013).
131. F. Tang, X. Cheng, G. Chen, R.K. Brow, J.S. Volz, and M. Koenigstein, "Electrochemical behavior of enamel-coated carbon steel in simulated concrete pore solution with various chloride contents," *Electrochim. Acta* **92** 36-46 (2013).
130. C. Wu, G. Chen, J.S. Volz, R.K. Brow, and M.L. Koenigstein, "Local bond strength of vitreous enamel coated rebar to concrete," *Construction and Building Materials*, **35** 428-439 (2012).
129. F. Tang, G. Chen, R.K. Brow J.S. Volz, and M. Koenigstein, "Corrosion Resistance and Mechanism of Steel Rebar Coated with Three Types of Enamel," *Corrosion Science*, **59**, 157-168 (2012).
128. C.R. Werner, J.S. Volz, G. Chen, R. K. Brow, and M.L. Koenigstein, "Corrosion performance of reactive enamel –coated reinforcing steel," *ACI Materials Journal*, **109**[4] 441-450 (2012).
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119. L. Zhang and R.K. Brow, "A Raman study of iron-phosphate crystalline compounds and glasses," *Journal of the American Ceramic Society*, **94**[9] 3123-30 (2011).
118. J.W. Newkirk, J. Hsu, R.K. Brow, and T. Lillo, "Chromium-free nickel alloys for hot sulfuric and sulfur environments," *International Journal of Hydrogen Energy*, **36**[7] 4588-4594 (2011).
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113. S.T. Reis, M.J. Pascual, R.K. Brow, C.S. Ray, and T. Zhang, "Crystallization and processing of SOFC sealing glasses," *Journal of Non-Crystalline Solids*, 356 3009-3012 (2010).
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Intellectual Property Disclosures

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7. Lance E. Carroll, Dennis J Eichorst, and Richard K. Brow, "Glass-ceramic for adhesion to Pd-Ag alloys," Honeywell FM&T Invention Disclosure P-KC1290, Sept. 28, 2017. (Copper-doped S-glass on Paliney.)

Invited Presentations (since 1998)

104. R.K. Brow, "Structure and Properties of Phosphate Glasses," invited lecture for MSE 524 a graduate class in Glass Science & Technology, Washington State University, Feb. 5, 2025.
103. RK Brow and CW Kim, "Iron Phosphate Glasses for Waste Immobilization," *Symposium on Ceramic Materials for Nuclear Energy Systems*, MS&T 2024, Pittsburgh, PA, Oct. 6-9, 2024
102. R.K. Brow, "Sailing the Glass SEA: Using Science, Engineering and Art to Prepare Students for Careers in Glass," 85th Annual Glass Problems Conference, Toledo, OH, Sept. 17, 2024.
101. R.K. Brow, "Reflections on the Structures of Phosphate Glasses," Plenary Lecture, All-Iowa Glass Conference, Cedar Rapids, IA, August 1, 2024.
100. R.K. Brow and S. Jung, "Delbert Day and the Development of Glasses for Biomedical Applications," GOMD Annual Meeting, Las Vegas, NV, May 2024.
99. R.K. Brow, RL Blatt, and RE Youngman, "Dissolution and Precipitation Reactions of Na-Ca-Borophosphate Glasses in Simulated Body Fluid," GOMD Annual Meeting, Las Vegas, NV, May 2024.
98. R.K. Brow, "Chuck Kurkjian, Two-Point Bending, and the Failure Characteristics of Silicate Glasses," GOMD Annual Meeting, New Orleans, LA, June 5, 2023.
97. R.K. Brow, N.S. Roberts, P.E. Porter, and J.V. Crum, "Microstructural Development and Chemical Durability of a Borosilicate Glass-Ceramic Waste-Form," *Symposium on Progressive Solutions to Improve Corrosion Resistance for Nuclear Waste Storage Materials*, MS&T 2022, Pittsburgh, PA, October 9-13, 2022.
96. R.K. Brow, "Introduction to Structural Studies of Glasses," International Year of Glass Graduate Seminar (Zoom Lecture), September 8, 2022.
95. R.K. Brow, "Glasses for Biomedical Applications," International Year of Glass Speaker Series, Coe College, August 30, 2022.
94. R.K. Brow, R. Blatt, P. Freudenberger, and R. Youngman, "Dissolution Behavior of Na-Ca-Borophosphate Bioactive Glasses," 26th International Congress on Glass, Berlin, Germany, July 3-8, 2022.
93. R.K. Brow, "Perspectives on Ceramic Engineering," Workshop on Ceramic Engineering Education, Colorado School of Mines, Golden, CO, June 14, 2022.
92. Richard Brow and Steven Jung, "From University Research to Clinical Use- A Biomedical Glass Story," National Day of Glass Celebration, Washington, DC, April 5-7, 2022.
91. R.K. Brow, "Borate and Borophosphate Glasses for Biomedical Applications," *Frontiers in Glass II*, a virtual workshop, Bristol Univ., UK, June 30, 2021.
90. R.K. Brow, "Borophosphate Glasses," Department of Chemistry Seminar, Dalhousie Univ., Halifax, NS, Canada, Mar. 6, 2020.
89. R.K. Brow, P. Freudenberger, R. Blatt, J.A. Semon, "Borophosphate Glasses for Biomedical Applications," MS&T19, Portland, OR, Oct. 3, 2019.
88. R.K. Brow, "Designing Glass Structures for Engineering Applications," Symposium on Structure-Property Relations in Non-Crystalline Materials, MRS Fall Meeting, Boston, MA, Nov 25-30, 2018.
87. R.K. Brow, Q. Wang, and H. Li, "Two-point bend studies of the failure characteristics of glass fibers," 2018 International Commission on Glass Annual meeting, Yokohama, Japan, 26 September 2018.
86. R.K. Brow, "Structure and the Dissolution Characteristics of Phosphate Glasses," Materials Science Seminar, The University of Shiga Prefecture, Shiga, Japan, 21 September 2018.

85. R.K. Brow, "Dissolution Studies of Specialty Glasses for Biomedical Applications and Nuclear Waste (But Not at the Same Time)", Tutorial Lecture at the 20th University Conference on Glass, Penn State University, August 13-17, 2018.
84. P. Freudenberger and R.K. Brow, "Borophosphate Glasses for Biomedical Applications," 7th International Congress on Ceramics, Symposium on the Frontiers of Glass Science," Iguacú Falls, Brazil, June 17-21, 2018
83. R.K. Brow, "Spectroscopic Studies of Borate and Phosphate Glasses: The Effects of Structure on Aqueous Durability," MS&T17, Pittsburgh, PA, Oct. 8-12, 2017
82. R.K. Brow, "Dissolution Studies of Specialty Glasses," Seminar for the School of Materials Science and Engineering, College of Engineering, Architecture & Technology, Oklahoma State University, Tulsa, OK, Sept. 14, 2017
81. R.K. Brow, "Dissolution and Precipitation Reactions of Borate Glasses for Biomedical Applications," Colorado Center for Advanced Ceramics (CCAC) Student Conference, Golden, CO, Aug. 17-18, 2017.
80. R.K. Brow, E. Ronchetto, and Z. Tang, "Two-point Bend Studies of Silicate Glass Strength and Fatigue", MS&T16, Salt Lake City, UT, Oct. 27, 2016
79. R.K. Brow, "Dissolution Characteristics of Specialty Glasses," International Advanced Glass Material Forum," Fuzhou University, Fuzhou, Fujian, China, April 14, 2016.
78. R.K. Brow, "Peering into glass: techniques to analyze glass structure," Materials Science and Engineering Department, Tongji University, Shanghai, China, April 12, 2016.
77. R.K. Brow, Q. Wang, and H. Li, "Two-point bend studies of the failure characteristics of E-glass fibers," 24th International Congress on Glass, Shanghai, China, April 8, 2016.
76. R.K. Brow, L. Ma, and C.E. Smith, "Structure and the Dissolution Characteristics of Phosphate Glasses," 11th PacRim Meeting of Ceramic Societies, ICC Jeju, Jeju, Korea, Aug. 30-Sept. 4, 2015.
75. R.K. Brow, "Specialty Glass Research," Nippon Electric Glass Research and Development Seminar, Kyoto, Japan, August 7, 2015.
74. R.K. Brow, "Sealing Glasses for Solid Oxide Fuel Cells and Related Devices," 1st Workshop on Advanced Glasses with New Functionalities, Ehime University, Ehime Prefecture, Japan, August 5, 2015.
73. R.K. Brow, "Borate Glasses for Biomedical Applications," 47th Annual Meeting of Young Glass Researchers, Glass Division of the Ceramic Society of Japan, Matsuyama, Ehime University, Ehime Prefecture, Japan, August 5, 2015.
72. R.K. Brow, "Design and Applications of Specialty Sealing Glasses," International Materials Institute- New Functionalities for Glass On-Line Course on Glass Processing, April 9, 2015.
71. R.K. Brow, J. George, and K. Goetschius, "Dissolution and Conversion to Hydroxyapatite of Bioactive Borate Glasses," DGG-GOMD Annual Meeting, Miami, FL, May 17-21, 2015.
70. R.K. Brow, "Sealing Glasses," IMI-NFG Online Cooperative Course on Glass Processing, April 16, 2015.
69. R.K. Brow, "Bio-glasses and glass-ceramics: current trends and future directions," 10th Brazilian Symposium on Glass and Related Materials, Sao Carlos, SP, Brazil, 26-30 October 2014
68. R.K. Brow, "Reflections from a Glass Guy," Keramos Career Speaker, Keramos Convocation, MS&T'14, Pittsburgh, PA, October 12, 2014.
67. R.K. Brow, "Iron phosphate glasses as alternative hosts for radioactive wastes," Institut de minéralogie, de physique des matériaux et de cosmochimie, Université Pierre et Marie Curie, Paris, France, September 30, 2014
66. R.K. Brow, "Sealing glasses for electrochemical devices," DGG-GOMD Annual Meeting, Aachen, Germany, May 25-29, 2014.
65. R.K. Brow, H. Shi, J. George, Q. Yang, and S. Chen, "Dissolution-Precipitation Behavior of Borate Bioglasses and its Effect on Cellular Activity," DGG-GOMD Annual Meeting, Aachen, Germany, May 25-29, 2014.
64. R.K. Brow, "Designing Glasses for Engineering Applications," Materials Science & Engineering Seminar, Tongji University, Shanghai, China, April 18, 2014.
63. R.K. Brow, "Specialty Glass Research," Materials Science & Engineering Seminar, Donghua University, Shanghai, China, April 17, 2014.
62. R.K. Brow, "Specialty Glass Research," Shanghai Institute of Optical Materials and Fine Mechanics, Shanghai, China, April 16, 2014.

61. R.K. Brow, "A New Role for the American Ceramic Society: Educating Engineers- Before and After that First Job," Ceramic Leadership Summit, Baltimore, MD, April 6-9, 2014
60. R.K. Brow, "Oxynitride Glasses: From SiALONs to Bio-materials," 8th International Symposium on Advanced Processing and Manufacturing Technologies for Structural and Multifunctional Materials and Systems (APMT8) in honor of Professor Stuart Hampshire, ICACC, Daytona Beach, FL, Jan. 26-31, 2014.
59. R.K. Brow, M.E. Schlesinger, and E.D. Zanotto, "Iron Phosphate Glasses and Melts- A US-Brazil Research Collaboration on Novel Materials for Nuclear Waste Remediation," *Engineering Ceramics Summit of Americas*, ICACC, Daytona Beach, FL, Jan. 27-Feb 1, 2013.
58. R.K. Brow, "Sealing Glasses for Electrochemical Devices," International Interactive Conference on Functional Glasses, Properties and Applications for Energy & Information, Siracusa, Sicily, Italy, Jan. 6-11, 2013.
57. R.K. Brow, "Dissolution Studies of Borate Glasses," Plenary Lecture for the 2012 Meeting of the Danish Ceramic Society, Aarborg, Denmark, Dec. 6-7, 2012.
56. R.K. Brow, "Corrosion of Specialty Glasses," Åbo Akademi Process Chemistry Centre (PCC) Distinguished Lecture, Åbo Akademi, Turku, Finland, Dec. 4, 2012.
55. R.K. Brow, "Phosphate glasses and the effects of short-, intermediate- and long-range order on properties," MRS Fall Symposium NN, Structure-Property Relations in Amorphous Solids, Boston, MA, Nov. 2012.
54. R.K. Brow, "Does Ceramic Engineering Really Matter?," Plenary Talk, 18th Annual New England Technical Ceramics Expo, Marlboro, MA, Oct. 17, 2012,
53. R.K. Brow, "Phosphate glasses for energy applications," International Workshop on Phosphate-based Materials for Energy Storage, Environment, and Biological Applications: Better Phosphates for a Better World, El Jadida, Morocco, Sept. 19-22, 2012.
52. R.K. Brow, "Structure, properties and applications of phosphate glasses," ETH Zurich, MSE Department, Zurich, Switzerland, Feb. 20, 2012.
51. R.K. Brow, "Aqueous corrosion reactions of borate glasses," Borate2011, Seventh International Conference on Borate Glasses, Crystals and Melts, Halifax, Nova Scotia, Canada, August 2011.
50. R.K. Brow, "Energy and Environmental Opportunities for Glass," (Plenary Lecture), University Conference on Glass Science, RPI, August 2-5, 2011.
49. R.K. Brow, "Chemical Durability of Specialty Glasses," Workshop on Optical Glasses, National United University, Miaoli, Taiwan, June 10, 2011.
48. RK Brow, "The intrinsic strength of glass," Flow and Fracture of Advanced Glasses (FFAG-5), St. Malo, Brittany, France, March 20-25, 2011.
47. R.K. Brow, "Structural chemistry and the properties of low-temperature glasses," Cooper Memorial Symposium, MS&T10, Houston, TX, October 17-21, 2010.
46. R.K. Brow, J.W. Lim and S.W. Yung, "Structure and properties of low temperature phosphate optical glasses," *NCM11*, Paris, France, June 27-July 2, 2010.
45. R.K. Brow, "Designing Phosphate Glasses for Optical and Other Applications," Materials Science & Engineering Seminar, Fuzhou University, Fuzhou, China, January 18, 2010.
44. R.K. Brow, "Recent glass research activities at Missouri S&T," Materials Science & Engineering Seminar, Tongji University, Shanghai, China, January 15, 2010.
43. R.K. Brow, "Mechanical properties and the structure of inorganic glasses," International Symposium on Functional Glasses, Zhejiang University, Hangzhou, China, Jan. 4-15, 2010.
42. R.K. Brow, "Glass in 2020: Opportunities in Research and Technology," Twelfth International Conference on the Physics of Non-Crystalline Solids, Foz do Iguacu, Brazil, Sept. 6-10, 2009.
41. R.K. Brow, "Designing Phosphate Glasses for Optical and Other Applications," Workshop on Optical Glasses, National United University, Miaoli, Taiwan, June 17, 2009.
40. R.K. Brow* and D.E. Day, "Phosphate Glasses as Alternative Hosts for Radioactive Wastes," 8th Pacific Rim Meeting of the American Ceramic Society and the Annual Meeting of the International Commission on Glass, Vancouver, BC, Canada, May 31-June 5, 2009.
39. R.K. Brow, "Structure and Properties of Oxide Glasses; Lectures on Structure by X-ray Techniques and Transport Properties of Glass," Workshop for New Researchers in Glass Science and Technology, Montpellier, France, May 4-5, 2009.
38. R.K. Brow, "Random Lessons from Glass Science," 2009 Scholes Lecture, Alfred University, April 16, 2009.

37. R.K. Brow, "Introduction to Glass-Ceramic Materials," Saint-Gobain TechDays, *Saint-Gobain Recherche*, Aubervilliers, France, Sept. 4, 2008
36. R.K. Brow, "Glass Technology in 2020: Glass Solutions to Energy and Environmental Problems," European Workshop on "Advanced Materials and Innovative Melting Technologies in the Year 2020," Brig, Switzerland, March 26-29, 2008.
35. R.K. Brow, "Glass Research at UMR," Tongji University Materials Forum, Shanghai, China, Nov. 15, 2007
34. R.K. Brow*, N.P. Wyckoff, and U. Hoppe, "Binary rare-earth phosphate glasses," 7th Pacific Rim Conference on Ceramic and Glass Technology (PacRim7), Shanghai, China, November 11-14, 2007
33. R.K. Brow, "Failure studies of pristine glass fibers," Materials Science & Engineering Seminar, The Ohio State University, February 16, 2007.
32. R.K. Brow, "Failure Studies of Glass," Owens-Illinois Lecture Series, Perrysburg, OH, February 15, 2007.
31. Richard K. Brow* and Brad C. Tischendorf, "Surface Chemistry of Phosphate Glasses," Eighth International Otto Schott Colloquium, Friedrich-Schiller University, Jena, Germany, July 23-27, 2006.
30. R. K. Brow*, "Looking at glass rather than through it," Art Institute of Chicago/Northwestern University Seminar Series on Conservation Science, Ceramic and Glasses: New methods for Old Problems, Northwestern University, May 30, 2006.
29. Richard K. Brow, "Structure and properties of phosphate glasses," UMR Chemistry Department Graduate Seminar, February 20, 2006.
28. R.K. Brow and N.P. Lower, "Failure strain studies of glass fibers," Third International Workshop on the Flow and Fracture of Advanced Glasses, Pennsylvania State University from October 2–5, 2005.
27. R.K. Brow, "Sealing Glasses for Solid Oxide Fuel Cells," 17th University Conference on Glass Science and 1st International Materials Institute Workshop on "New Functionality in Glasses", Penn Stater Conference Center Hotel, State College, PA, June 26-30, 2005.
26. R.K. Brow, "Thermochemically stable sealing materials for solid oxide fuel cells," Solid State Energy Conversion Alliance 6th Annual Workshop, Pacific Grove, CA, Apr. 18-21, 2005.
25. R.K. Brow*, "Glass Seals for Solid Oxide Fuel Cells," Iowa State Materials Science & Engineering Seminar, Ames, IA, March 3, 2005.
24. R. K. Brow, "A new look at phosphate glasses," George W. Morey Award Lecture, Fall Meeting of the Glass & Optical Materials Division of the American Ceramic Society, Cocoa Beach, FL, Nov. 7-12, 2004.
23. R.K. Brow, "Structure and Properties of Phosphate Glasses," University of North Dakota, Physics Department Colloquium, Oct. 29, 2004.
22. R. K. Brow and S.T. Reis, "Designing Sealing Glasses for Solid Oxide Fuel Cells," ASM Materials Solution Conference, Fuel Cells: Materials, Processing and Manufacturing Technologies, Columbus, OH Oct. 18-20, 2004.
21. R.K. Brow, "Structure and Properties of Phosphate Glasses," Norbert Kreidl Memorial Conference, Trenčín and Lednické Rovne, Slovak Republic, June 23-26, 2004.
20. N.P. Lower, R. K. Brow, and C.R. Kurkjian, "Failure Studies of Silicate Glass Fibers," 106th Annual Meeting of the American Ceramic Society, Indianapolis, IN, Apr. 18-21, 2004.
19. R.K. Brow and S.T. Reis, "Sealing glasses for solid oxide fuel cells," International Symposium on Solid Oxide Fuel Cell (SOFC) Materials and Technology, 28th International Cocoa Beach Conference on Advanced Ceramics and Composites, Cocoa Beach, FL Jan 25-30, 2004.
18. R. K. Brow, N.P. Lower and C. R. Kurkjian, "The Effects of Structure on the Inert Failure Strain of Glass Fibers," Annual Meeting of the International Commission on Glass, Brazil, Sept. 2003.
17. Richard K. Brow, "Structure and properties of phosphate glass fibers," PPG Glass Technical Center, Pittsburgh, PA, May 15, 2003.
16. R.K. Brow, "Compositional Design of Sealing Glasses," 105th Annual Meeting of the American Ceramic Society, Nashville, TN, Apr. 28-May 1, 2003.
15. R.K. Brow, "Nd-doped laser glasses," Physics Colloquium, Truman State University, Nov. 20, 2002.
14. R.K. Brow and C. R. Kurkjian, "Structure and the Intrinsic Strength of Glass," 7th International Otto Schott Colloquium, Jena, Germany, July 7-10, 2002
13. R.K. Brow, "Aluminophosphate Laser Glasses," Materials Science Seminar, Physics Department, Rostock University, Rostock, Germany, July 5, 2002.

12. R. K. Brow, "Rare Earth Coordination Environments in Phosphate Glasses," PacRim IV, Wailea, Maui, Hawaii, Nov. 4-8, 2001.
11. R. K. Brow, "Reconsidering Glass Structure- Modifier Effects on Phosphate Glasses," 56th Annual Forum of the Pennsylvania Ceramic Association, Sept. 20-22, 2001, Penn State University, University Park, PA.
10. R. K. Brow, "Phosphate Glass Research," Astaris, Inc., St Louis, MO, September 6, 2000.
9. R. K. Brow, "Designing Glasses for Novel Sealing Applications," Fusite Worldwide Conference, Cincinnati, OH, July 13-14, 2000.
8. R. K. Brow "Structural Anomalies in Phosphate Glasses," 9th International Conference on the Physics of Non-Crystalline Solids, Tucson AZ, Oct. 17-21, 1999.
7. R. K. Brow, "Structure and Properties of Sealing Glasses," Coe College Physics Department Seminar, Cedar Rapids, IA, October 8, 1999.
6. R. K. Brow, "Designing Glasses for Novel Sealing Applications," Fall Meeting of the Glass & Optical Materials Division, American Ceramic Society, Cleveland, OH, Oct. 3-6, 1999.
5. R. K. Brow, "Spectroscopic Studies of Phosphate Glass Structures," American Crystallographic Association, Buffalo, N.Y., May 22-27, 1999.
4. R. K. Brow, "Structural Anomalies in Ultraphosphate Glasses," University of Illinois Materials Science and Engineering Seminar, Feb. 25, 1999.
3. R. K. Brow, "The Nature of Phosphate Glasses," Alfred University Graduate Seminar, Alfred, NY, Oct. 22, 1998.
2. R. K. Brow, "Lessons Learned Developing Sealing Glasses," Alfred University Undergraduate Seminar, Alfred, NY, Oct. 22, 1998.
1. R. K. Brow, "Phosphate Glasses," Solutia, Inc., St. Louis, MO, August 27, 1998.

Master's Theses (First Job)

20. Ted Lewis, "Specialty glass fibers for optical applications," defended Nov. 8, 2024, degree received December 2024 (*Wieland Group (formerly Olin Brass)*, East Alton, IL)
19. Aaron Read, "Additive manufacturing of glass-metal seal components," defended March 2023, walked May 2023 (*Honeywell/KCNSC*).
18. Noah Weyrauch, "Sub-critical crack growth and fatigue behavior of alkali silicate glass," defended March 2023, walked May 2023 (*Honeywell/KCNSC*).
17. Nicholas Roberts, "Microstructural development and its effect on aqueous corrosion of a borosilicate glass-ceramic for waste vitrification," defended August 2018, walked December 2018. (*CoorsTek*)
16. Fujian Tang, "Corrosion resistance of enamel coating modified by calcium silicate and sand particles for steel reinforcement in concrete" defended November 2013; walked May 2014 (*S&T Post-doc*).
15. Sagnik Saha, "Acid-resistant coatings for soda-lime silicate glass," August 2010 (*Asahi Glass*)
14. Jong-Wook Lim, "Low temperature glasses for optical applications," August 2010. (*LG Innotek*)
13. Chris Larson, "The development of passivation layers on corrosion-resistant Ni-alloys", defended December 2008, awarded May 2009. (*United Space Alliance*)
12. Jiawanjun Shi, "Properties of alkaline resistant calcium iron phosphate glasses," August 2007. (*Alfred Univ. PhD Program*)
11. Rosella Ferraro, "Mechanical properties of fiber-reinforced cement composites", December 2006. (*Univ. Miami PhD Program*)
10. Sandhya Jayaraman Rukmani, "Crystallization and fluorescence studies of lithium-disilicate glass-ceramics for dental restorations," September 2006. (*Saint Gobain*)
9. Loretta Francis, "Low-temperature phosphate glass for enameling applications," May 2006. (*Kohler*)
8. Laxmi Kanth Peddi, "Bio-active Borate Glass Coatings for Titanium and its Alloys," August 2005. (*Medtronic*)
7. Kristine A. Miller, "Iron Phosphate Glasses for Black Enamels on Window Glass," December 2003 (*Fusite*).
6. Adam J. Lang, "Failure characteristics and durability of phosphate glasses," December 2003. (*Boeing*)
5. Heather K. Teitelbaum, "Borate Glasses for Bioactive Coatings on Titanium," May 2002. (*Univ. Missouri Kansas City, PhD program*)

4. Jessica D. Lowry, "Dissolution Behavior of Alkali Borate Glasses," May 2002. (*Univ. Florida PhD program*)
3. Andrew K. Wittenauer, "Preparation, Properties and Structure of Rare Earth Phosphate Glasses," May 2002. (*Univ. Illinois*)
2. Carol A. Click, "Properties and Structures of Cesium Phosphate Glasses," May 2000. (*pursued PhD, UMR*)
1. Laura E. Johnsen, "Novel Sealing Glasses", May 2000. (*Oak Ridge National Lab*)

PhD Theses (First job)

18. Han Zhang, "The structure, properties, and dissolution behavior of phosphate and borate glasses," (co-advised with Aditya Kumar), defended February 2025 (*Corning, Inc.*)
17. Parker Freudenberger, "Structure and properties of phosphate and borophosphate glasses for optical and biomedical applications," defended Feb 3, 2023; degree received May 2023 (*Kansas City National Security Complex*)
16. Melodie Schmitt, "Investigation of the thermodynamics of iron phosphate melts and stability of iron phosphate glasses: effects of composition and iron redox ratio," defended December 2021; degree received May 2022.
15. Jincheng Bai, "Properties and structures of alkali molybdenum iron phosphate glasses for nuclear waste immobilization," defended, November 2020; degree received, May 2021 (*S&T Research Scientist*)
14. Erica Ronchetto, "The effects of fatigue and weathering on the failure behavior of commercial soda-lime silicate glass," December 2019 (*Xerox PARC*)
13. Youqu Shen, "Biomaterials for bone regeneration," December 2019 (co-advised with M. Rahaman)
12. Jaime George, "Dissolution behavior of borate glasses and precipitation of phosphate compounds," May 2015 (*PNNL Post-doc*).
11. Xiaoming Cheng, "Phosphate-doped borosilicate enamel coating used to protect reinforcing steel from corrosion," December 2014 (*Medtronic*)
10. Kathryn Goetschius, "Design of borate biomedical glasses," December 2014. (*DuPont*)
9. Lina Ma, "Corrosion behavior of phosphate-based glasses," December 2014. (*Corning, Inc.*)
8. Charmayne Smith, "The structure and properties of ternary zinc phosphate glasses for optical applications," May 2014. (post doc, *Univ. Central Florida, then PNNL*)
7. Zhongzhi Tang, "Failure characteristics of glass fibers," December 2011 (*Corning, Inc.*)
6. Jen-Hsien Hsu, "The corrosion of Ni₃Si alloys in sulfuric acid", December 2010 (co-advised with Joe Newkirk) (post-doc, *Missouri S&T, then Alfred University*)
5. Liying Zhang, "Liquidus behavior of iron phosphate melts," August 2010. (co-advised with Mark Schlesinger) (*Lawrence Berkeley Lab post doc, then Corning*)
4. Teng Zhang, "Glass-ceramics for solid oxide fuel cell seals," May 2008. (*Fuzhou Univ.*)
3. Brad Tischendorf, "Weathering and aqueous corrosion reactions with phosphate glasses," December 2005. (*Medtronic*)
2. Nathan Lower "Failure characteristics of glass fibers," December 2004. (*Rockwell-Collins*)
1. Carol Click "Platinum dissolution in phosphate glass", December 2002. (*Schott Glass*)

External Examiner for PhDs

- Jenna Tainio, "Bioactive borosilicate glasses for bone tissue engineering applications," Tampere University, Tampere, Finland, January 2024 (Jonathan Massera)
- Arun Krishnamurthy, "Structure and Chemical Durability of Glasses for High-Level Nuclear Waste Immobilization: A Solid-State Nuclear Magnetic Resonance Spectroscopy Study," University of Manitoba, Winnipeg, Canada, September 2021. (Scott Kroeker)
- Yiming Li, "Bioactive borate-based glass coatings for titanium alloy femoral stems," Ryerson University, Toronto, Ontario, Canada, November 2017 (Mark Towler)
- Myrtille Hunault, "Role of transition metal ions (Co, Cu) in glass coloration: application to medieval stained-glass windows," Universite Pierre et Marie Curie, Paris, France, September 2014 (Georges Calas)
- Susanne Fagerland, "Understanding the in vitro dissolution rate of glasses with respect to future clinical applications," Åbo Akademi, Turku, Finland, December 2012 (Leena Hupa)

- Maura Corbu, “Synthesis, characterization and tribochemical behavior of polyphosphate glasses,” ETH Zurich, Switzerland, February 2012 (Antonella Rossi)

Post Docs/Visiting Professors and Scientists

20. Prof. Tatsuaki Sakamoto (Ehime University, Matsuyama, Japan), 9/1/2016-8/30/2017
19. Prof. Fan-Bean Wu (National United University, Miaoli, Taiwan), 6/28/2016-12/27/2016
18. Dr. Akira Saitoh (Ehime University, Matsuyama, Japan), 8/2014-9/2014
17. Prof. Qingwei Wang (Engineering Research Center of Advanced Glass, Donghua University, Shanghai, China), 4/2014-3/2015
16. Dr. Christian Bischoff (Iowa State University), 10/2013-9/2015
15. Dr. Raphael Reis (Sao Carlos Univ., Sao Carlos, Brazil), 12/2012-9/2013
14. Prof. Francisco Serbena (Univ. Ponta Grossa, Ponta Grossa, PR, Brazil), 2/2012-7/2012
13. Dr. Jen-Hsien Hsu (Missouri S&T), 1/2011-12/2013
12. Prof. Huey-Jiuan Lin, National United University, Miaoli, Taiwan, 1/2010-2/2010
11. Dr. Luciana Ghussn (Sao Carlos University, Sao Carlos, Brazil), 1/2008-4/2008; 4/2011-9/2013
10. Prof. Hsiwen Yang (National United University, Maoli, Taiwan), 8/2007-1/2008
9. Prof. Jian Lin (Tongji University, Shanghai, China), 8/2007-11/2007
8. Dr. Nathan Lower (UMR) 2/2005-6/2005
7. Dr. Mary Reidmeyer (UMR), 9/03-9/07
6. Dr. Signo Reis (University of Sao Paulo, Sao Paulo, Brazil), 2002-2007, research associate professor 2008-2011
5. Prof. Andrew Burns (Kent State University), 9/2001-5/2002
4. Dr. Tihana Fuss (UMR)
3. Dr. Mevlut Karabulut (UMR)
2. Prof. Murat Bengisu (Eastern Mediterranean University, Cyprus), 8/2001-7/2002
1. Dr. Ezz Metwalli (National Research Center, Cairo, Egypt)

Research Contracts Awarded (UMR/Missouri S&T, since 1998):

Sponsored Research Summary: \$21.2M total, (\$9.4M individual credit to RKB)

Specific details provided on request

Teaching Interests

Professor Brow has taught courses on glass science and technology, including a sophomore-level class that introduces concepts of structure-property relationships to explain how changes in glass composition affect glass properties, and that introduces students to commercial glass manufacturing processes and the compositional design of commercial glasses. He taught a sophomore-level laboratory class, where students learn to make different types of glasses and to use thermo-analytical and optical techniques to characterize their properties. He taught a senior/grad-level course that goes into greater depth on the relationships between glass composition, structure, and properties, with an emphasis on commercial glass manufacturing. In this course, he led students through glass plants where they saw how glass is manufactured and learned how engineers can improve manufacturing processes. Finally, he taught courses, or contributed lectures to courses, on kinetic processes for materials (undergrad), optical properties (grad), and biomaterials (grad).

Courses Taught

Specific details provided upon request

Service Interests

Professor Brow's principal professional organization is the American Ceramic Society (ACerS), for which he has served in various leadership capacities, including the New Mexico section chair, the Glass and Optical Materials Division (GOMD) chair, the ACerS Board of Directors, the Executive Committee, and President of the Society. He has organized many meetings and sessions for meetings, principally for the GOMD. He was named a Distinguished Life Member of ACerS in 2020. He was a founding member of the Board of Trustees for the Ceramic and Glass Industry Foundation. He has been affiliated with the International Commission on

Glass (ICG), as a US representative to the ICG, a member of the Coordinating Technical Committee, and the President of the ICG Congress in 2019. He organized the first International Conference on Phosphate Glasses in 2014 and currently chairs its International Advisory Board. On campus, Prof. Brow has been deeply involved in a variety of service activities, particularly as it relates to the recruitment and retention of women faculty (ADVANCE Leadership team, Faculty Recruitment and Retention task force), curriculum development, and faculty awards.

Selected Service Activities of Note Since 2008

Professional Service

- Member, International Advisory Board, *International Conference on Structure of Non-Crystalline Materials* (2004-)
- Member, International Advisory Board, *International Conference on the Physics of Non-Crystalline Solids* (2007-)
- Associate Editor, *International Journal of Applied Glass Science*, 2009-
- International Editorial Board, *Journal of Non-Crystalline Solids*, 2011-
- Chair of the International Organizing Committee for the 3rd *International Conference on Phosphate Glasses*, Corning, NY, July 2023.
- US Planning Committee for the United Nations Declaration of 2022 as *The International Year of Glass*, 2019-2022
- External Advisory Board for the Glass Engineering Science program in the New York State College of Ceramics, Alfred University, 2018-
- President, 25th *International Congress on Glass*, Boston, MA, June 2019, (2013-2019)
- Chair of the International Organizing Committee and editor of the proceedings for the 2nd *International Conference on Phosphate Glasses*, St. Anne's College, Oxford, UK, July 2017
- International Advisory Board, 24th *International Congress on Glass*, Shanghai, China, April 2016
- Founding Member of the Board of Trustees, *Ceramic and Glass Industry Foundation*, 2015-2023
- Chair of the International Organizing Committee for the, 1st *International Conference on Phosphate Glasses*, Pardubice, Czech Republic, July 2014
- Member, International Advisory Board, *Center for Research, Technology and Education in Vitreous Materials (CeRTEV)*, Federal University of São Carlos, São Carlos, São Paulo State, Brazil, 2013-
- Member, Advisory Board, *International Materials Institute on New Functionalities of Glass*, Lehigh University, 2007-2015
- Past-President, *American Ceramic Society* (2013-14); chaired ACerS Nominating Committee, member of the CGIF executive director search committee; organized ACerS-ECerS education exchange partnership
- President, *American Ceramic Society* (2012-13)- led the creation of the *Ceramic and Glass Industry Foundation* and development of *Technical Interest Groups*
- President-Elect, *American Ceramic Society* (2011-12)
- Member of the Board of Directors (2007-2009), *American Ceramic Society*
- Chair, ACerS Glass and Optical Materials Division (2002-03)
- Member of the Coordinating Technical Committee of the *International Commission on Glass* (2007-2009, 2010-2012)

University Service (details provided upon request)

Community Service

- St Patrick School Board (2007-2010), President (2009/10)
- St Patrick School Science Fair Judge Coordinator, 2009-2023
- Sports Inc., Rolla (SIR) girls' basketball coach, 2008-11
- RYBS girls' softball coach, 2002-2007