

## **Dr. John C. Mauro**

National Academy of Engineering | National Academy of Inventors  
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### **PROFESSIONAL EXPERIENCE**

<b>The Pennsylvania State University, University Park, Pennsylvania</b>	
Department Head, Materials Science and Engineering	2025-present
Dorothy Pate Enright Professor, Materials Science and Engineering	2022-present
Associate Head for Graduate Studies, Materials Science and Engineering	2019-2025
Professor, Materials Science and Engineering	2017-2022
<b>Corning Incorporated, Corning, New York</b>	
Senior Research Manager, Glass Research	2014-2017
Senior Research Associate, Glass Research	2014
Research Manager, Glass Research	2014
Research Associate, Glass Fundamentals	2010-2014
Research Associate, Materials Modeling	2009-2010
Senior Research Scientist, Modeling and Simulation	2005-2009
Senior Engineer, Product and Process Modeling	2002-2005
Process Engineer, Simulation	2001-2002
Intern/Consultant, Process Engineering and Modeling	1999-2001

### **EDUCATION**

Ph.D. in Glass Science, Alfred University (GPA: 4.0/4.0)	2006
B.S. in Glass Engineering Science, Alfred University (GPA: 4.0/4.0)	2001
B.A. in Computer Science, Alfred University (GPA: 4.0/4.0)	2001

### **AUTHORED TEXTBOOKS**

J.C. Mauro, *Materials Kinetics: Transport and Rate Phenomena*, 2<sup>nd</sup> ed., Elsevier, 2025.  
J.C. Mauro, *Materials Kinetics: Transport and Rate Phenomena*, Elsevier, 2021.  
A.K. Varshneya, J.C. Mauro, *Fundamentals of Inorganic Glasses*, 3<sup>rd</sup> ed., Elsevier, 2019.

## RESEARCH HIGHLIGHTS

- Inventor or co-inventor of Corning® Gorilla Glass® products, used on over three billion devices worldwide.
- Co-inventor of LionGlass™, Penn State's novel glass compositional family that reduces the carbon footprint of glass manufacturing by >50% while improving mechanical performance.
- Inventor of the Mauro-Yue-Ellison-Gupta-Allan (MYEGA) and Mauro-Allan-Potuzak (MAP) models of supercooled liquid and glass viscosity.
- Inventor of temperature-dependent constraint theory and new statistical mechanical models of the nonequilibrium glassy state.
- Author or co-author of over 400 peer-reviewed publications (*h* index = 67, # citations >22,000) and 102 Corning restricted technical reports (RTRs).
- Inventor of 85 granted U.S. patents, with many additional patents pending.
- Author of *Materials Kinetics: Transport and Rate Phenomena*, the definitive textbook on kinetics in materials science and engineering.
- Co-author of *Fundamentals of Inorganic Glasses*, 3<sup>rd</sup> ed., the authoritative textbook on glass science and technology (with A.K. Varshneya).

## EDITORIAL APPOINTMENTS

Editor-in-Chief, <i>Journal of the American Ceramic Society</i>	2023-present
Editor, <i>Journal of the American Ceramic Society</i>	2017-2022
Associate Editor, <i>Journal of the American Ceramic Society</i>	2012-2017
Associate Editor, <i>International Journal of Applied Glass Science</i>	2013-present
Editorial Board Member, <i>MRS Bulletin</i>	2021-present
Editorial Board Member, <i>Journal of Non-Crystalline Solids</i>	2011-2024
Volume Organizer, <i>MRS Bulletin</i>	2017
Chief Specialty Editor, <i>Frontiers in Materials</i>	2014-2018
Assistant Editor, <i>Grimdark Magazine</i>	2024-present
Assistant Editor, <i>Before We Go Blog</i>	2024-present

## PROFESSIONAL AWARDS AND HONORS

1. **Darshana and Arun Varshneya Frontiers of Glass Technology Lecturer, American Ceramic Society (2025)**  
The Frontiers of Glass Science and the Frontiers of Glass Technology lectures are designed to encourage scientific and technical dialogue in glass topics of significance that define new horizons, highlight new research concepts, or demonstrate the potential to develop products and processes for the benefit of humankind.
2. **Scholes Lecturer, Alfred University (2024)**

The Scholes Lecture Series was established in 1982 by alumni of Alfred University to honor the late Samuel R. Scholes, who in 1932 established the first glass science program in the United States at the New York State College of Ceramics at Alfred University. He served as dean, associate dean, head of the Department of Glass Technology, and professor of glass science.

3. **First Place, Penn State Tech Tournament (2023)**

Awarded for LionGlass, which reduces the carbon footprint of glass manufacturing by >50%.

4. **Member, World Academy of Ceramics (2023)**

Recognizes individuals who have earned international renown for their significant contribution to the advancement of ceramics culture, science, technology, industry and/or art.

5. **Wulff Lecturer, Massachusetts Institute of Technology (2022)**

This lecture series pays tribute to the legacy of the late Professor John Wulff—an esteemed educator known for his skillful, thought-provoking, and entertaining teaching style. The Wulff Lecture is an engaging and accessible presentation designed for a broad audience. Its purpose is to inform, inspire, and motivate MIT undergraduates to explore the study of materials science and engineering.

6. **Fiat Lux Award, Alfred University (2022)**

Established to honor an Alfred University alumnus for their lifelong career contributions and service to the community.

7. **Member, National Academy of Engineering (2022)**

Election to the National Academy of Engineering is among the highest professional distinctions accorded to an engineer. Academy membership honors those who have made outstanding contributions to “engineering research, practice, or education, including, where appropriate, significant contributions to the engineering literature” and to “the pioneering of new and developing fields of technology, making major advancements in traditional fields of engineering, or developing/implementing innovative approaches to engineering education.”

8. **Wilson Award for Excellence in Teaching (2022), Penn State University**

Created in 1969, the Wilson Award for Excellence in Teaching honors exceptional achievement in teaching. This award is given in recognition of outstanding teaching represented by performance in a single course of instruction or a series of contributions around a coherent theme.

9. **Faculty Scholar Medal for Entrepreneurship, Technology Transfer and Economic Development (2021)**

Awarded by the Penn State Office of the President.

10. **Fellow, National Academy of Inventors (2020)**  
Election to NAI Fellow status is the highest professional distinction accorded solely to academic inventors. NAI Fellows are academic inventors who have demonstrated “a prolific spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on quality of life, economic development and the welfare of society.”
11. **Paul F. Robertson Award for Earth and Mineral Sciences Research Breakthrough of the Year (2020), The Pennsylvania State University**  
Awarded for excellence in research in the Penn State College of Earth and Mineral Sciences.
12. **Fellow, Society of Glass Technology (2019)**  
Awarded to “individual members who have met prescribed requirements of education, achievement or service to the Industry and the Society.”
13. **Faculty of the Year Award (2019), Department of Materials Science and Engineering, The Pennsylvania State University**  
Awarded by students to the faculty member who goes above and beyond in teaching, research, and service.
14. **Ethnically Diverse Group of Employees (EDGE) Excellence Award (2016), Corning Incorporated**  
Awarded for promotion of diversity and professional development of a diverse workforce at Corning Incorporated.
15. **Karl Schwartzwald Professional Achievement in Ceramic Engineering (PACE) Award, American Ceramic Society (2016)**  
The Karl Schwartzwald Professional Achievement in Ceramic Engineering (PACE) Award is presented by The American Ceramic Society’s National Institute of Ceramic Engineers (ACerS/NICE). The purpose of this award is to focus public attention on the outstanding achievements of young persons in ceramic engineering and to illustrate the opportunities available in the ceramic engineering profession. The award recognizes the nation’s outstanding young ceramic engineer whose achievements have been significant to the profession and to the general welfare of all people.
16. **Fellow, American Ceramic Society (2015)**  
The Fellow designation recognizes ACerS members who have distinguished themselves through outstanding contributions to the ceramic arts or sciences, broad and productive scholarship in ceramic science and technology, conspicuous achievement in ceramic industry, or by outstanding service to the Society.
17. **Richard M. Fulrath Award, American Ceramic Society (2015)**  
The Fulrath Award promotes technical and personal friendships between professional Japanese and American ceramic engineers and scientists and encourages a greater

understanding among the diverse cultures surrounding the Pacific Rim. The award recognizes individuals for their excellence in research and development of ceramic sciences and materials and for building a “Bridge Across the Pacific.”

**18. W.H. Zachariasen Award (2015)**

The Zachariasen Award is given to a young researcher who has published at least 10 articles of exceptionally high quality in the *Journal of Non-Crystalline Solids* in the preceding three years. The award is named in honor of W.H. Zachariasen, the founder of modern glass science. This is the first Zachariasen Award to be given in approximately 20 years.

**19. S. Donald Stookey Award for Exploratory Research (2013)**

Awarded by Corning Incorporated for excellence in exploratory research.

**20. Outstanding Service to Corning Specialty Materials Award (2013)**

Awarded for Corning® Gorilla® Glass composition development.

**21. Sir Alastair Pilkington Award, Society of Glass Technology (2012)**

Named as the inaugural recipient of this award, which is “to be offered biennially to workers who have achieved important results within seven years of entering the field of glass research.” The award “spans all dimensions of glass studies, creativity, and research: the arts as well as the science, conservation, and museum studies, as well as engineering, history and design.”

(Award Lecture: *Future of Industrial Glass Research*, Maastricht, Netherlands)

**22. Best in Show Award—Consumer Electronics Show (2012)**

Awarded for Corning® Gorilla® Glass 2, Las Vegas, Nevada

**23. Vittorio Gottardi Prize, International Commission on Glass (2011)**

The Gottardi Prize is “awarded annually to young people with outstanding achievements in the field of glass in research and development, teaching, writing, management, or commerce.”

(Award Lecture: *Temperature-Dependent Constraint Theory of Glass*, Shenzhen, China)

**24. Corning Outstanding Publication Award (2011)**

Publication: *Topological Principles of Borosilicate Glass Chemistry*

**25. Corning Specialty Materials Division Excellence Award (2011)**

Awarded for Next Generation Gorilla® Glass Development

**26. American Ceramic Society Future Leaders Program (2010-2011)**

**27. Woldemar A. Weyl Award (2010)**

Awarded by the Pennsylvania State University and the International Commission on Glass, the Weyl Award is “presented every three years to recognize a young scientist

whose work in glass has shown ingenuity, initiative, and, above all, innovative thinking.”

(Award Lecture: *Recent Advances in Liquid and Glassy Dynamics*, Salvador, Brazil)

28. **Alfred R. Cooper Fellow & Distinguished Speaker (2009)**, American Ceramic Society (Award Lecture: *A Physical Approach to Industrial Glass Research*, Pittsburgh, PA)

29. **Corning Outstanding Publication Award (2009)**  
Publication: *Nonequilibrium Viscosity of Glass*

30. **Corning Optical Fiber Excellence Award (2007)**  
Awarded for metropolitan area network design.

31. **Norbert J. Kreidl Award (2006)**  
Awarded by the American Ceramic Society, Glass and Optical Materials Division (GOMD) for best graduate student research.  
(Award Lecture: *A New Model of the Glass Transition*, Greenville, SC)

32. **Corning Optical Fiber Excellence Award (2002)**  
Awarded for high data rate fiber optic system research.

#### **PH.D. GRADUATES (MAURO GROUP)**

1. Dr. Nicholas Clark, “Processing-Structure-Property Relations in Phase Separated Calcium Aluminosilicate Glasses” (2022).
2. Dr. Anthony DeCeanne, “Lithium Disilicate Glass-Ceramics Containing Lithium Tantalate as a Secondary Phase” (2022).
3. Dr. Karan Doss, “Fundamentals of Nonexponential Relaxation in Glass-Forming Systems” (2022).
4. Dr. Aubrey Fry, “Field Strength Effect on the Elastoplastic and Mechanical Properties of Single Modifier Aluminoborosilicate Glasses” (2023).
5. Dr. Katy Gerace, “Exploring the Fundamental Contributions to the Dielectric Properties of  $\text{LiNbO}_3$  and  $\text{NaNbO}_3$  Glass-Ceramics with Microwave Frequency Measurements” (2023).
6. Dr. Brittney Hauke, “Time to Relax: Relaxation Behavior of Sodium Aluminosilicate Glasses from Modulated Differential Scanning Calorimetry” (2025).
7. Dr. Katelyn Kirchner, “Fluctuations in Bulk and Thin Film Glasses” (2024).
8. Dr. Kuo-Hao Lee, “Atomistic Simulations of Borosilicate Glasses: Mechanical Response Under Different Loading Conditions” (2021).
9. Dr. Yinan Lin, “Mixed Modifier Effect in Aluminosilicate Glasses” (2021).
10. Dr. Titus Reed, “Influence of Phosphates on Phase Formation and Pore Solution in Alkali-Activated  $\text{MgO-Al}_2\text{O}_3\text{-SiO}_2\text{-P}_2\text{O}_5$  Cements” (2025).

11. Dr. Adam Shearer, “Exploring the Margins: Network Topology and Properties of Vanadate Glasses” (2025).
12. Dr. Rebecca Welch, “Oxygen Triclusters in Aluminosilicate Glasses: A Computational Approach” (2025).
13. Dr. Collin Wilkinson, “Adventures in High Dimensions: Understanding Glass for the 21<sup>st</sup> Century” (2021).

## CURRENT PH.D. STUDENTS

1. Elif Pinar Akman
2. Aaron Bossen
3. Chang Han
4. Christina Hunter
5. Bahareh Kheilnezhad
6. Daniel Kramer
7. Mason Link
8. Mehmet Ozay
9. Cristian Perez
10. Jessica Sly
11. Shaylee Traugh
12. Danqi Yin

## SELECTED INDUSTRIAL CAREER HIGHLIGHTS AT CORNING

### Glass Research Leadership

- Attracted, retained, and developed a **diverse workforce** of top scientists in the world in glass and glass-ceramics research.
- Led the organization of the first-ever **Corning Machine Learning Workshop** and **Corning Glass Summit** series of conferences.
- Created the **Gordon S. Fulcher sabbatical program** at Corning.
- Designed and led Corning’s portfolio of **fundamental and exploratory research** projects in glass and glass-ceramics.
- Developed and implemented a **vision and strategy** for the Glass Research department at Corning.
- Spearheaded Corning’s efforts in **materials modeling**, including the glass genome effort to accelerate the design of new glass compositions through a combination of physics-based modeling and machine learning.

### Corning Specialty Materials

- Developed the first-ever **chemical strengthening of alkali-free glass** using pressure vessel ion exchange.
- Led the efforts to understand and model **frangibility** of chemically strengthened glass.

- Developed highly **scratch-resistant glass compositions** without the use of ion exchange.
- Inventor of **Corning® Gorilla® Glass 3 with Native Damage Resistance**, Corning's first commercialized glass composition developed and optimized exclusively through modeling before any glasses were melted in the lab. This glass combines high intrinsic damage resistance and optimized ion exchange properties with full zircon compatibility to eliminate fusion-line zirconia defects.
- Co-inventor of **Corning® Gorilla® Glass 2**, having the highest compressive stress of any chemically strengthened glass on the market. Gorilla® Glass 2 earned the Best in Show Award at the 2012 Consumer Electronics Show in Las Vegas and has been hailed by Wendell Weeks as the most successful new product launch in Corning history.
- Leader of the **Fundamentals of Ion Exchange and Glass Model Development** projects, which have developed an unprecedented level of understanding of the fundamental physics and chemistry governing the ion exchange process and chemically strengthened glasses. This understanding has been directly applied to the research and development of new commercial glass compositions and processes for Corning's businesses.
- Developed several **transition glass compositions** with low zircon breakdown viscosities to minimize defects during the transitioning of glass tanks to new compositions. The use of a transition glass inhibits formation of fusion line zirconia by suppressing the zircon breakdown reaction:  $\text{ZrSiO}_4 \rightarrow \text{ZrO}_2 + \text{SiO}_2$ . The transition glasses are also optimized for density and delivery temperature in order to minimize the transition time at the plant.
- Developed a **suite of modeling tools** for optimizing the properties of ion-exchangeable glasses, including both customer-facing attributes and properties related to manufacturing. Also provided new insights into critical properties such as the lattice dilation coefficient, mutual diffusivity, and stress optic coefficient, as well as processing conditions such as level of salt bath poisoning. Invented a new statistical mechanical technique for predicting the bonding between network formers and network modifiers in mixed network glasses, such as Gorilla Glass-type compositions.
- Developed a method for increasing the compressive stress of ion-exchangeable glass based on **engineered on-the-draw cooling** profiles. Results of the engineered cooling experiment at HA138 show that optimized on-the-draw cooling can give an extra ~17 MPa of compressive stress in as-drawn 2319, without any post-draw heat treatment.
- Developed a lattice Monte Carlo model for mutual diffusivity that explicitly accounts for the order of the diffusive hopping events, i.e., first a sodium ion must leave a site (creating a vacancy) before a potassium ion can hop into that site (annihilating the vacancy). This model has been in a program for designing **tailored stress profiles** (buried peaks, etc.) using multi-step ion exchange.
- Developed a new topological modeling approach to predict the **composition dependence of glass hardness** and the impact of surface treatments on glass hardness. Our article was selected as an Editor's Suggestion by the editors of *Physical Review Letters* and highlighted in the APS online journal *Physics*.

## Corning Display Technologies

- Derived the new **MYEGA model for liquid viscosity** that enables accurate extrapolation of high temperature viscosity data to low temperatures, reducing the need for expensive and time-consuming measurements. This model replaces the nearly century-old Vogel-Fulcher-Tammann (VFT) equation and has many important physical and technological implications.
- Developed the new **MAP model for nonequilibrium viscosity**, enabling huge improvements in accuracy over the previous Tool-Narayanaswamy-Moynihan (TNM) model, which had been in use since the 1970s. The MAP model offers prediction of glass compaction behavior with ppm-level accuracy. This model currently plays a vital role in all customer interactions where compaction is a concern (e.g., High Performance Display).
- The physical origin of **stretched exponential relaxation** is considered as one of the oldest unsolved problems in science. Our experiments reveal a bifurcation of the stretching exponent, with  $\beta = 3/5$  for stress relaxation and  $\beta = 3/7$  for structural relaxation, both on macroscopic length scales. These results point to two fundamentally different mechanisms governing stress relaxation versus structural relaxation, corresponding to different effective dimensionalities during the relaxation process. This fundamental difference between stress and structural relaxation is critical for High Performance Display applications.
- Developed a new technique for determining the **fictive temperature of fusion drawn glass** using differential scanning calorimetry (DSC). Unlike previous techniques, the new technique is valid and rigorous for any thermal history, e.g., annealed, quenched, or hyperquenched.
- Developed a universal model for the **composition dependence of viscosity** curves in pSi and Supergreen Display glasses.
- Derived the first-ever model for the **composition dependence of nonequilibrium viscosity and compaction**, including both kinetic and thermodynamic effects. The model has been validated over a wide range of commercial glasses for both CDT and CSM and offers the ability to predict the compaction performance and flow behavior of new glass compositions that have never previously been melted.
- Developed a **new topological modeling approach** that enables accurate prediction of the scaling of annealing point and fragility with composition. This is the first model of its kind and allows for analytical solutions of very complicated condensed matter systems. The model provides a natural explanation for regions of constant annealing point in the composition space. By offering a physical basis for the observed trends in annealing point and fragility, the topological modeling approach enables an effective physical alternative to traditional empirical models, which require significantly more experimental data to reveal compositional trends.
- Derived a **minimalist landscape model** of glass relaxation that shows the inherent decoupling of fast and slow relaxation modes, a phenomenon that has been confirmed in the design of new glass compositions for High Performance Display.

- Determined the physical origins of **supercooled liquid fragility**, i.e., the steepness of viscosity curves at the glass transition. In addition to this breakthrough scientific accomplishment, demonstrated that increasing fragility leads to substantial decreases in both compaction and compaction variability in Display glasses.

### Glass Transition and Relaxation

- Conducted the first-ever quantitative study of **relaxation of glass at room temperature**, showing that fast relaxation modes lead to measurable dimensional changes at room temperature, and that this relaxation follows a stretched exponential form with a stretching exponent predicted by Phillips.
- Derived and solved the **first-ever model of glass transition behavior based on *ab initio* physics**, without any empirical fitting parameters.
- Discovered the inherent **nonmonotonic relaxation of density fluctuations** during glass relaxation, subsequently confirmed by SAXS measurement at Lawrence Berkeley Laboratory. Density fluctuations are a critical feature governing the fracture behavior and Rayleigh scattering of a glass.
- Derived a comprehensive relationship between the **heat capacity and configurational entropy** of glass, reconciling the glassy state with the Second and Third Laws of Thermodynamics.
- Derived a model to characterize and quantify the **fragile-to-strong transition**, discovered to be an apparently universal feature of metallic glass-forming liquids.
- Invented the concept of **continuously broken ergodicity**, the first and only statistical mechanical framework for accurate modeling of glass transition range behavior and the glassy state. The model solves a decades-old mystery concerning the residual entropy of glass at absolute zero temperature and provides a basis for John's nonequilibrium viscosity model, which gives Corning a unique competitive advantage in accurate compaction modeling.
- Invented a new **master equation solver** for computing the dynamics of glassy systems. While traditional molecular dynamics techniques are limited to nanosecond time scales, the new master equation solver can predict glass transition and relaxation behavior on an arbitrarily long time scale. The ability to access realistic laboratory time scales offers a huge competitive advantage for Corning, since accurate modeling of glass properties is possible only when accounting for a realistic thermal history. With the tool developed by John, Corning is now uniquely armed to model realistic glass transition and relaxation behavior. While a groundbreaking scientific achievement in itself, this tool has enabled all of the tremendous progress reported above for CDT and CSM.
- Invented several other **unique computational algorithms** for implementation of the new glass transition model. The new computational techniques include a self-consistent Monte Carlo algorithm for computing inherent structure density of states and an eigenvector-following technique for locating transition points under isobaric conditions. These techniques provide required input for the new glass transition model and are essential for its successful implementation. Corning is unique in the world in having these computational abilities.

- Established Corning Incorporated as a **world leader in glass theory** and understanding of glass transition and relaxation processes. John served as organizer for several conference sessions and workshops and will chair the 2010 American Ceramic Society Glass and Optical Materials Division Meeting in Corning, NY. This has been extremely valuable both for engaging the external community in research activities and attracting new talent to Corning.
- Building on the pioneering work of H.N. Ritland at Corning, John provided a rigorous test of the decades-old hypothesis that the glassy state can be described in terms of a **distribution of fictive temperatures**. John proved that this is an unfounded assumption and that no combination of fictive temperatures can describe a glass. This is an extremely important scientific result with direct implications for our modeling and understanding of the glass transition and the glassy state. This result provided the groundwork for John's minimalist landscape model of glass compaction, which has been applied to develop an accurate model for EAGLE XG.

### Atomistic Modeling of Glass

- Primary developer of **Molsym**, Corning's internal tool for atomistic simulations. Molsym is a unique tool in that it offers a combination of molecular dynamics and Monte Carlo techniques, together with completely new algorithms invented by John to address the specific challenges of glass transition modeling. Molsym offers greater flexibility and efficiency compared to other commercial codes. Molsym has been applied to a variety of glass and ceramics problems by several researchers in Corning.
- Developed a **multiscale modeling technique** combining quantum mechanical simulations of small clusters with large-scale Monte Carlo simulations at the atomistic level. Demonstrated that the modeling technique provides more accurate glass structures compared to standard techniques such as density functional theory. The new modeling technique is especially adept at capturing structural defects and evaluating their impact on glass properties.
- Provided the first evidence for **rigidity percolation** based on atomistic simulation. Rigidity percolation leads to a "reversibility window" where thermal compaction effects are minimized.
- Led the two-year interaction with MIT for developing a new technique for **computation of supercooled liquid viscosity** from atomistic simulations. The new technique enables the calculation of high values of viscosity (up to the annealing point) from the atomic scale.
- Conducted the first-ever study of **dynamical heterogeneities** in industrial glass compositions to investigate the chemical origin of the distribution of relaxation times in Display-type glass compositions.

### Corning Optical Fiber/Corning Cable Systems

- Developed new network modeling tools for **metro/access networks**. This tool has proved critical for Corning's success in the FTTx market.
- Provided crucial modeling support for COF/CCS interaction with **Level 3**. Developed a rigorous model of Level 3's San Francisco Bay Area network,

- considering a variety of network topologies and growth scenarios. Results included hardware counts, deployment costs, and number of fibers consumed. We presented our results, conclusions, and recommendations at a meeting with Wendell Weeks and Level 3 CTO Jack Waters. This modeling proved essential for growing our customer relationship with Level 3.
- Developed model to assess the maximum allowable connector loss with **Corning's ClearCurve fiber**, where coupling from the fundamental mode into higher modes at the connectors can lead to interference at the receiver.
  - Developed and validated an **analog transmitter tool** enabling the calculation of analog system performance for NexCor and other fiber types. Provided critical modeling support for COF's interaction with Verizon regarding Corning's NexCor fiber.
  - Developed suite of modeling tools to help understand crucial role of **stimulated Brillouin scattering (SBS)** in access networks. Invented several strategies to increase SBS tolerance. SBS is the major limiting impairment in high-power CATV and festoon systems. An increased SBS threshold leads to savings in expensive system components such as optical amplifiers. John's work provides Corning with a unique competitive advantage in this area.
  - Invented a network design strategy for **suppression of composite second order (CSO) distortions** in FTTx networks. Corning has been granted a patent on this work, which offers a low-cost, high-performance path for "Triple Play" FTTx networks.
  - Developed an important tool to determine the **reliability of optical communication systems** during the service lifetime of optical fiber and cable repairs. Developed strategies for maintaining 99.999% system reliability and gave specific recommendations for dispersion-managed systems as part of the i4 project. The tool has been subsequently been applied during several other customer interactions.
  - Determined the narrowest measurement window over which the extinction ratio of the **dynamic spectrum equalizer (DSE)** needs to be guaranteed to avoid cross-talk penalties in a network. John's modeling work enabled Corning to relax specifications with a key customer, Ceyba, who had demanded a guaranteed extinction ratio of 40 dB over  $\pm 15$ GHz for the DSEs. Based on John's modeling, Ceyba agreed to lower this specification to  $\pm 12$ GHz.
  - Developed key modeling capabilities for **advanced modulation formats** such as RZ, CSRZ, DPSK, RZ-DPSK, and AMI. These capabilities have proved critical to the design and development of Corning's next-generation optical fibers and in all of COF's customer interactions. Invented various modulation formats that offer significant linear and nonlinear advantages.
  - Designed **optimized optical communication systems** involving advanced modulation formats and Corning's dispersion managed fiber. Provided key input to the COF commercial group. Determined optimal filter parameters for various modulation formats in 10 and 40 Gb/s systems. This input has been used in all of Corning's subsequent modeling of optical communication systems.
  - Investigated the impact of **optical add-drop multiplexers (OADMs)** on 40 Gb/s transmission using various fiber types and modulation formats. We found that the

presence of a significant number of OADMs deteriorates the advantage of alternative modulation formats over standard NRZ in point-to-point systems. Fiber type becomes a major differentiator in system performance. This work showed a strong advantage for Corning's premium fibers.

- Validated Corning's model for **computing the Q penalty** due to cross-talk arising from multi-path interference (MPI). The agreement between theory and experiment was found to be very good with a discrepancy not exceeding 0.5 dB (in 20log). This work has proved critical to many of COF's customer interactions since 2001. The excellent validation shown during this work is still shown to customers to build confidence in Corning's optical modeling capabilities.
- Instrumental in the development, deployment, validation, and maintenance of a whole **suite of optical transport simulation and computational tools**. Validation included optical transmitters (both digital and analog, and covering a variety of modulation formats), system performance (10 and 40 Gb/s) in the linear and nonlinear regimes, as well as models for specific impairments such as cross-phase modulation (XPM) and amplified spontaneous emission (ASE) noise. All recent systems modeling work has been built on this solid foundation by John. These tools are used extensively in the development and understanding of optical fiber attributes in current and next generation optical communication networks. This work has proved critical for the development of Corning's new optical fibers and in COF's commercial interactions.
- Developed **Smart Syssym**, enabling a 10x improvement in computational speed without sacrificing the accuracy of system performance calculations. This tool has proved critical for enabling large-scale system optimization over a variety of parameters (such as launch power, dispersion map, etc.)
- Developed and validated **analytical models** for a variety of system impairments, including cross-phase modeling (XPM), amplified spontaneous emission (ASE) noise, intrachannel self-phase modulation (iSPM) and intrachannel cross-phase modulation (iXPM).

### **Corning Life Sciences**

- Developed and validated a signal pathway model for Corning's **resonant waveguide grating biosensor** for the sensing of living cells. This also provided the groundwork for modeling dynamic mass reallocations.
- Developed a model for studying the **dynamics of lipid membrane spreading** onto substrates of arbitrary topology and chemistry. This model was useful in designing substrates for functional GPCR microarrays, leading to two very broad patents for Corning.
- Developed a mesoscopic modeling tool for simulation of **membrane conformation and self-assembly**, in support of the GPCR modeling efforts.

### **SOCIETY LEADERSHIP ACTIVITIES**

1. **J.C. Mauro**, Executive Committee Member, Glass and Optical Materials Division, American Ceramic Society (2017-2021).

2. **J.C. Mauro**, Organizer and Host, Joint MRS-ACerS Webinar on “Data-Driven Ceramics and Glass Research” (2020).
3. **J.C. Mauro**, Program Chair, International Congress on Glass, Boston, MA (2019).
4. **J.C. Mauro**, M. Micoulaut, and G.G. Naumis, Session Organizers, *International Materials Research Congress*, Cancun, Mexico (2015).
5. E. Ma, Y. Shi, **J.C. Mauro**, and M. Micoulaut, Organizers, Symposium on “Structure-Property Relations in Amorphous Solids,” *Materials Research Society Fall Meeting*, Boston, MA (2014).
6. **J.C. Mauro**, P. Boolchand, and M. Micoulaut, Organizers, J.C. Phillips Honorary Symposium, *10<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology*, San Diego, CA (2013).
7. **J.C. Mauro**, Chair of “First-Principles Calculations of Amorphous Solids” Session, Materials Research Society Fall Meeting, Boston, MA (2012).
8. P. Lucas and **J.C. Mauro**, Organizers, “Topology and Rigidity” Session, *Glass and Optical Materials Division Meeting of the American Ceramic Society*, Savannah, GA (2011).
9. **J.C. Mauro**, Program Chair and Organizer, *Glass and Optical Materials Division Meeting of the American Ceramic Society*, Corning, NY (2010). Under John’s leadership, the number of registered conference attendees nearly doubled compared to the previous GOMD meeting in Tucson (total of 379 participants vs. 198 at the previous meeting).
10. **J.C. Mauro**, Founding Chair of Technical Committee 27 of the International Commission on Glass, dedicated to “Atomistic Modeling of Glass” (2009 to 2011)
11. **J.C. Mauro**, M. Micoulaut, and N. Mousseau, Organizers, *International Workshop on Topology, Structure, and Dynamics in Non-Crystalline Solids*, Paris, France (2009).
12. **J.C. Mauro**, Organizer of “Glass Structure and Modeling” Session, *European Forum on New Glass Applications*, Montpellier, France (2009).
13. **J. C. Mauro** and S. Lakhwani, Co-Chairs of Corning Science & Technology People Development Award Committee (2008).
14. **J.C. Mauro** and U. Fotheringham, Organizers of “Theory and Modeling” Session, *8<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology*, Vancouver, Canada (2008).
15. **J.C. Mauro** and L.R. Corrales, Organizers of “Theory and Modeling” Session, *Glass and Optical Materials Division Meeting of the American Ceramic Society*, Tucson, AZ (2008).
16. L. Wondraczek, R. Conradt, and **J.C. Mauro**, Organizers of the *Glass and Entropy Workshop*, Trencin, Slovakia (2008).
17. **J.C. Mauro**, Organizer of the “Multiscale Modeling of Glass” Session, *Glass and Optical Materials Division Meeting of the American Ceramic Society*, Rochester, NY (2007).
18. **J.C. Mauro**, Chair of “Thermodynamics” Session, *International Congress on Glass*, Strasbourg, France (2007).

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13. C.C. Perez Velasquez, M. Montazerian, and **J.C. Mauro**, “Corrosion of Zirconium-Based Refractories in Glass-Contact Areas: Mechanisms and Challenges,” *International Journal of Applied Ceramic Technology* **22**, e15064 (2025).
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20. H. Deng, Y. Fang, Q. Fu, **J.C. Mauro**, and M.S. Pambianchi, “Bioactive Glass Compositions and Dentin Hypersensitivity Remediation,” US 11,274,059 (2022).
21. B.G. Aitken, L. Ma, and **J.C. Mauro**, “Optical Boroaluminate Glasses,” US 11,247,934 (2022).
22. A.J. Ellison, J.S. Frackepohl, **J.C. Mauro**, D.M. Noni, Jr., and N. Venkataraman, “Aluminoborosilicate Glass Substantially Free of Alkali Oxides,” US 11,168,018 (2021).
23. J.T. Harris, G. Hu, and **J.C. Mauro**, “Laminated Glass Article with Determined Stress Profile and Method of Making the Same,” US 11,167,528 (2021).
24. J. Luo and **J.C. Mauro**, “Transparent Ion-Exchangeable Silicate Glasses with High Fracture Toughness,” US 11,078,105 (2021).
25. D.C. Allan, A.J. Ellison, and **J.C. Mauro**, “Methods for Making Glass Articles,” US 11,023,630 (2021).
26. T.J. Kiczenski, **J.C. Mauro**, M.D. Pierson-Stull, R.A. Schaut, and N. Venkataraman, “Intermediate to High CTE glasses and Glass Articles Comprising the Same,” US 10,988,405 (2021).

27. H.D. Boek, **J.C. Mauro**, L.A. Moore, M.S. Pambianchi, N. Venkataraman, and M.O. Weller, “Antimicrobial Phase-Separating Glass and Glass-Ceramic Articles and Laminates,” US 10,918,110 (2021).
28. M.J. Dejneka and **J.C. Mauro**, “Fast Ion Exchangeable Glasses with High Indentation Threshold,” US 10,858,281 (2020).
29. H. Deng, Q. Fu, and **J.C. Mauro**, “Chemically Strengthened Bioactive Glass-Ceramics,” US 10,857,259 (2020).
30. D.C. Allan, A.J. Ellison, X. Guo, T.J. Kiczenski, **J.C. Mauro**, and M. Potuzak, “Method and Apparatus for Predicting Glass Dynamics,” US 10,846,446 (2020).
31. H. Deng, Y. Fang, Q. Fu, L. Ma, **J.C. Mauro**, M.J. Snyder, and D.L. Widmer-Quiel, “Bioactive Glass Microspheres,” US 10,751,367 (2020).
32. A.S. Amosov, H.D. Boek, F. Coppola, M.J. Dejneka, **J.C. Mauro**, N. Venkataraman, and M.O. Weller, “Glass Article and Method for Forming the Same,” US 10,710,927 (2020).
33. **J.C. Mauro**, “High Strength Antimicrobial Glass,” US 10,696,586 (2020).
34. H. Deng, Y. Fang, Q. Fu, A. Li, L. Ma, and **J.C. Mauro**, “Bioactive Borophosphate Glasses,” US 10,676,713 (2020).
35. H. Deng, Y. Fang, Q. Fu, and **J.C. Mauro**, “Bioactive Aluminoborate Glasses,” US 10,647,962 (2020).
36. M.J. Dejneka, A.J. Ellison, and **J.C. Mauro**, “Zircon Compatible, Ion Exchangeable Glass with High Damage Resistance,” US 10,570,053 (2020).
37. M.J. Dejneka, Q. Fu, T.M. Gross, X. Guo, S. Likitvanichkul, and **J.C. Mauro**, “Ion Exchangeable Glass, Glass Ceramics and Methods for Making the Same,” US 10,544,059 (2020).
38. M.J. Dejneka, X. Guo, and **J.C. Mauro**, “Fictivated Glass and Method of Making,” US 10,494,292 (2019).
39. **J.C. Mauro** and L.M. Thirion, “Reverse Photochromic Borosilicate Glasses,” US 10,487,003 (2019).
40. J. Luo and **J.C. Mauro**, “Transparent Silicate Glasses with High Fracture Toughness,” US 10,427,972 (2019).
41. M.J. Dejneka, **J.C. Mauro**, M.D. Patil, K.D. Pierotti, J.S. Sutherland, and A. Zellet-Lukaso, “Bonded Zirconia Refractories and Methods for Making the Same,” US 10,407,349 (2019).
42. **J.C. Mauro**, A. Tandia, and K.D. Vargheese, “Alkali-Doped and Alkali-Free Boroaluminosilicate Glass,” US 10,399,890 (2019).
43. M.A. DeLamielleure, **J.C. Mauro**, C.M. Smith, and L. Zhang, “Borosilicate Glasses with Low Alkali Content,” US 10,329,186 (2019).
44. T.M. Gross, **J.C. Mauro**, Y.Z. Mauro, R. Rai, A. Tandia, and Z. Tang, “Fast Ion-Exchangeable Boron-Free Glasses with Low Softening Point,” US 10,315,949 (2019).
45. M. He, **J.C. Mauro**, R.J. Parysek, and N. Venkataraman, “Laminated Glass Articles with Phase-Separated Claddings and Methods for Forming the Same,” US 10,259,739 (2019).
46. D.C. Allan, A.J. Ellison, X. Guo, T.J. Kiczenski, **J.C. Mauro**, and M. Potuzak, “Method and Apparatus for Prediction Glass Dynamics,” US 10,216,871 (2019).

47. **J.C. Mauro**, M. Potuzak, and M.M. Smedskjaer, "Aluminosilicate Glasses for Ion Exchange," US 10,155,690 (2019).
48. T.J. Kiczenski, **J.C. Mauro**, M.D. Pierson-Stull, R.A. Schaut, and N. Venkataraman, "Intermediate to High CTE Glasses and Glass Articles Comprising the Same," US 10,112,865 (2018).
49. A.S. Amovsov, H.D. Boek, F. Coppola, M.J. Dejneka, **J.C. Mauro**, N. Venkataraman, and M.O. Weller, "Glass Article and Method for Forming the Same," US 10,077,208 (2018).
50. M.J. Dejneka and **J.C. Mauro**, "Fast Ion Exchangeable Glasses with High Indentation Threshold," US 10,000,410 (2018).
51. A.J. Ellison, J.S. Frackepohl, **J.C. Mauro**, D.M. Noni, Jr., and N. Venkataraman, "Alkali-Doped and Alkali-Free Boroaluminosilicate Glass," US 10,000,409 (2018).
52. S. Gomez, T.J. Kiczenski, **J.C. Mauro**, R.A. Schaut, M.M. Smedskjaer, N. Venkataraman, "Low CTE, Ion-Exchangeable Glass Compositions and Glass Articles Comprising the Same," US 9,868,664 (2018).
53. **J.C. Mauro**, "High Strength Antimicrobial Glass," US 9,840,437 (2018).
54. **J.C. Mauro**, "Low CTE Alkali-Free Boroaluminosilicate Glass Compositions and Glass Articles Comprising the Same," US 9,764,981 (2017).
55. M.J. Dejneka, Q. Fu, T.M. Gross, X. Guo, S. Likitvanichkul, and **J.C. Mauro**, "Ion Exchangeable Glass, Glass-Ceramics and Methods for Making the Same," US 9,790,124 (2017).
56. A.J. Ellison, J.S. Frackepohl, **J.C. Mauro**, D.M. Noni, Jr., and N. Venkataraman, "Alkali-Doped and Alkali-Free Boroaluminosilicate Glasses," US 9,643,884 (2017).
57. **J.C. Mauro**, M. Potuzak, and M.M. Smedskjaer, "Aluminosilicate Glasses for Ion Exchange," US 9,701,580 (2017).
58. D.C. Allan, A.J. Ellison, and **J.C. Mauro**, "Heat Treatment for Strengthening Glasses," US 9,751,802 (2017).
59. **J.C. Mauro**, M.M. Smedskjaer, and N. Venkataraman, "High CTE Opal Glass Compositions and Glass Articles Comprising the Same," US 9,701,570 (2017).
60. B.G. Aitken, J.E. Dickinson, Jr., T.J. Kiczenski, **J.C. Mauro**, and A. Tandia, "Fusion Formable Alkali-Free Intermediate Thermal Expansion Coefficient Glass," US 9,643,883 (2017).
61. **J.C. Mauro**, "High CTE Potassium Borosilicate Core Glasses and Glass Articles," US 9,512,030 (2017).
62. M.J. Dejneka, A.J. Ellison, and **J.C. Mauro**, "Ion Exchangeable Glass with High Damage Resistance," US 9,517,967 (2017).
63. S. Gomez, T.J. Kiczenski, **J.C. Mauro**, R.A. Schaut, M.M. Smedskjaer, and N. Venkataraman, "Low CTE, Ion-Exchangeable Glass Compositions and Glass Articles Comprising the Same," US 9,522,836 (2017).
64. **J.C. Mauro** and L.M. Thirion, "Reverse Photochromic Borosilicate Glasses," US 9,527,769 (2017).
65. D.C. Allan, A.J. Ellison, X. Guo, T.J. Kiczenski, **J.C. Mauro**, and M. Potuzak, "Methods and Apparatus for Predicting Glass Dynamics," US 9,533,907 (2017).
66. A.J. Ellison, T.J. Kiczenski, S.R. Markham, and **J.C. Mauro**, "High Strain Point Aluminosilicate Glasses," US 9,604,870 (2017).

67. M.J. Dejneka, A.J. Ellison, and **J.C. Mauro**, “Ion Exchangeable Glass with High Compressive Stress,” US 9,290,413 (2016).
68. **J.C. Mauro**, C.M. Smith, and D. Zhao, “Methods for Chemically Strengthening Glass Articles,” US 9,284,218 (2016).
69. T.J. Kiczenski, **J.C. Mauro**, M.D. Person-Stull, R.A. Schaut, and N. Venkataraman, “Intermediate to High CTE Glasses and Glass Articles Comprising the Same,” US 9,346,705 B2 (2016).
70. M. He, **J.C. Mauro**, R.J. Parysek, and N. Venkataraman, “Laminated Glass Articles with Phase-Separated Claddings and Methods for Forming the Same,” US 9,393,760 B2 (2016).
71. A.J. Ellison, T.J. Kiczenski, S.R. Markham, and **J.C. Mauro**, “High Strain Point Aluminosilicate Glasses,” US 9,162,919 B2 (2015).
72. B.G. Aitken, J.E. Dickinson, Jr., T.J. Kiczenski, **J.C. Mauro**, and A. Tandia, “Fusion Formable Alkali-Free Intermediate Thermal Expansion Coefficient Glass,” US 8,975,199 B2 (2015).
73. M.J. Dejneka, A.J. Ellison, and **J.C. Mauro**, “Zircon Compatible, Ion Exchangeable Glass with High Damage Resistance,” US 8,946,103 B2 (2015).
74. M.J. Dejneka, A.J. Ellison, and **J.C. Mauro**, “Zircon Compatible, Ion Exchangeable Glass with High Damage Resistance,” US 8,951,927 B2 (2015).
75. A.J. Ellison, T.J. Kiczenski, and **J.C. Mauro**, “Methods for Reducing Zirconia Defects in Glass Sheets,” US 9,061,931 B2 (2015).
76. M.J. Dejneka, **J.C. Mauro**, M. Potuzak, M.M. Smedskjaer, and R.E. Youngman, “Chemically-Strengthened Borosilicate Glass Articles,” US 9,145,333 B1 (2015).
77. M.J. Dejneka, **J.C. Mauro**, and M.M. Smedskjaer, “Down-Drawable Chemically Strengthened Glass for Information Storage Devices,” US 9,156,725 B2 (2015).
78. D.C. Allan, A.J. Ellison, and **J.C. Mauro**, “Methods and Apparatus for Predicting Glass Properties,” US 8,666,705 (2014).
79. D.C. Allan, A.J. Ellison, and **J.C. Mauro**, “Methods for Producing Ion-Exchangeable Glasses,” US 8,720,226 (2014).
80. A.J. Ellison, T.J. Kiczenski, and **J.C. Mauro**, “Methods for Reducing Zirconia Defects in Glass Sheets,” US 8,746,010 (2014).
81. A.R.E. Carré, A.M. Efremov, Y. Fang, Y. Hong, V. Lacarriere, J. Lahiri, F. Lai, **J.C. Mauro**, S. Raghavan, and B.L. Webb, “Membrane Arrays and Methods of Manufacture,” US 7,939,341 (2011).
82. **J.C. Mauro** and S. Raghavan, “Optical Fiber with Low Second Order Distortion,” US 7,512,346 (2009).
83. A.R.E. Carré, A.M. Efremov, Y. Fang, Y. Hong, V. Lacarriere, J. Lahiri, F. Lai, **J.C. Mauro**, S. Raghavan, and B.L. Webb, “Membrane Arrays and Methods of Manufacture,” US 7,473,533 (2009).
84. **J.C. Mauro**, S. Morasca, V. Pruneri, and S. Raghavan, “Unipolar Electrical to CSRZ Optical Converter,” US 6,842,125 (2005).
85. **J.C. Mauro**, S. Raghavan, and S. Ten, “Variable Duty Cycle Optical Pulses,” US 6,721,081 (2004).

## PATENT APPLICATIONS

(Not Listed)

### INVITED PRESENTATIONS

1. **J.C. Mauro**, “Glass for a Sustainable Future,” Invited Road Scholar Presentation, The Pennsylvania State University, University Park, Pennsylvania (2025).
2. **J.C. Mauro**, “Glass for a Sustainable Future,” Invited Presentation, Clark Atlanta University, Atlanta, Georgia (2025).
3. **J.C. Mauro**, “LionGlass: Enabling Sustainable Glass Manufacturing,” Invited Presentation, Révelor Days, Cerfav : Centre Européen de Recherches et de Formation aux Arts Verriers, Vannes-le-Châtel, France (2025).
4. **J.C. Mauro**, “LionGlass: Setting New Standards in Sustainability,” Keynote Lecture, Franklin’s Legacy: Protecting Innovation, State College, Pennsylvania (2025).
5. A.K. Varshneya, G. Macrelli, S. Karlsson, and **J.C. Mauro**, “Stronger Glass Products: Expanded Horizons,” Keynote Lecture, International Congress on Glass, Kolkata, India (2025).
6. **J.C. Mauro**, “Glass for a Sustainable Future,” Invited Seminar, Sustainable Materials Management Webinar Series, Pennsylvania Recycling Markets Center, Harrisburg, Pennsylvania (2024).
7. **J.C. Mauro**, “LionGlass: Setting New Standards in Sustainability,” Keynote Lecture, GOLDen GEMS, University Park, Pennsylvania (2024).
8. **J.C. Mauro**, “LionGlass: Setting New Standards in Sustainability,” Keynote Lecture, Penn State Alumni Association (PSAA) Presents: EMS Showcase, University Park, Pennsylvania (2024).
9. **J.C. Mauro**, “Glass for a Sustainable Future,” Plenary Talk, AGC Annual Meeting, Yokohama, Japan (2024).
10. **J.C. Mauro**, “A Future of Glass,” Invited Seminar, ASML, San Diego, California (2024).
11. **J.C. Mauro** and M. Pilliod, “Fundamentals of Glass Science and Technology,” Invited DuraMAT Webinar, National Renewable Energy Laboratory (2024).
12. **J.C. Mauro**, “Glass Transition and Relaxation Behavior,” Invited Presentation, University Conference on Glass, Alfred, New York (2024).
13. **J.C. Mauro**, “LionGlass: Enabling Sustainable Glass Manufacturing,” Plenary Talk, Chinese Ceramics Society, Shanghai, China (2024).
14. G. Macrelli, A.K. Varshneya, **J.C. Mauro**, and S. Karlsson, “Surface and Near Surface Issues in Ion Exchange in Silicate Glasses,” Invited Presentation, International Commission on Glass Annual Meeting, Incheon, South Korea (2024).
15. **J.C. Mauro**, “Master Equations,” Invited Presentation, Alfred University, Alfred, New York (2024).
16. **J.C. Mauro**, “There and Back Again: My Journey in Glass,” Scholes Award Lecture, Alfred University, Alfred, New York (2024).

17. **J.C. Mauro**, “Journey Before Destination,” Keynote Lecture, Phi Beta Kappa Induction Ceremony, The Pennsylvania State University, University Park, Pennsylvania (2024).
18. **J.C. Mauro**, “A Future of Glass,” Invited Colloquium, West Virginia University, Morgantown, West Virginia (2024).
19. **J.C. Mauro**, “LionGlass: Enabling Sustainable Glass Manufacturing,” Invited Presentation, Aachen University, Aachen, Germany (2024).
20. G. Macrelli, A.K. Varshneya, S. Karlsson, and **J.C. Mauro**, “Sustainable Glass Technologies for Thinner Yet Stronger Glass Products,” Invited Presentation, Italian Chapter of the American Ceramic Society (2024).
21. C. Claireaux, N.L. Clark, **J.C. Mauro**, and O. Verheijen, “LionGlass: A Solution to Decarbonize the Batch,” Keynote Presentation, Glass Problems Conference, Columbus, Ohio (2023).
22. **J.C. Mauro**, “Relaxation is Everywhere,” Invited Seminar, University of Maryland, College Park, Maryland (2023).
23. G. Macrelli, A.K. Varshneya, S. Karlsson, and **J.C. Mauro**, “Sustainable Glass Technologies for Thinner Yet Stronger Glass Products,” Plenary Lecture, Society of Glass Technology, Cambridge, United Kingdom (2023).
24. A.K. Varshneya, G. Macrelli, S. Yoshida, S.H. Kim, A. Ogrinc, and **J.C. Mauro**, “Indentation and Abrasion in Glass Products: Lessons Learned and Yet to Be Learned,” Invited Lecture, Society of Glass Technology, Cambridge, United Kingdom (2023).
25. S. Karlsson, A.K. Varshneya, G. Macrelli, and **J.C. Mauro**, “Sustainability Through Lightweighting of Commercial Glass Containers,” Invited Lecture, Society of Glass Technology, Cambridge, United Kingdom (2023).
26. **J.C. Mauro**, “LionGlass: Stronger, Thinner, and More Sustainable Glass Panes,” Invited Seminar, Vienna Technical University, Vienna, Austria (2023).
27. **J.C. Mauro**, “LionGlass: A Phosphate-Based Approach to Carbon-Neutral Glass Manufacturing,” Plenary Talk, Şişecam Glass Symposium, Istanbul, Turkey (2023).
28. **J.C. Mauro**, “Throwing Stones in Glass Houses,” Invited Presentation, Taylor Lecture Series, The Pennsylvania State University, University Park, Pennsylvania (2023).
29. **J.C. Mauro**, “LionGlass: Reducing the Carbon Footprint of Glass Manufacturing through Composition Design,” Invited Presentation, GlassTrend, Eindhoven, The Netherlands (2023).
30. **J.C. Mauro**, “A Future of Glass,” Keynote Presentation, 3M, St. Paul, Minnesota (2023).
31. **J.C. Mauro**, “Perspectives on the UN International Year of Glass,” Invited Lecture, Research and Development Leadership Program, Pall Corporation, Cortland, New York (2022).
32. **J.C. Mauro**, “Perspectives on the UN International Year of Glass,” Wulff Lecture, Massachusetts Institute of Technology, Cambridge, Massachusetts (2022).
33. **J.C. Mauro**, “Relaxation is Everywhere,” Invited Colloquium, Department of Geosciences, The Pennsylvania State University, University Park, Pennsylvania (2022).

34. **J.C. Mauro**, “Welcome to the Glass Age,” Keynote Presentation, Materials Day, The Pennsylvania State University, University Park, Pennsylvania (2022).
35. **J.C. Mauro**, “Decoding the Glass Genome,” Invited Presentation, Ilum School of Science, Centro Nacional de Pesquisa em Energia e Materiais, Brazil (2022).
36. **J.C. Mauro**, “A Future of Glass,” Invited Presentation, Alfred University, Alfred, New York (2022).
37. **J.C. Mauro**, “Relaxation is Everywhere,” Invited Presentation, CaliBaja Webinar, University of California—San Diego (2022).
38. **J.C. Mauro**, “Fundamentals of the Glassy State,” Invited Presentation, Hokkaido University, Sapporo, Japan (2022).
39. **J.C. Mauro**, “Theories of Glass Formation,” Invited Presentation, Hokkaido University, Sapporo, Japan (2022).
40. **J.C. Mauro**, “Glass Structure and Properties,” Invited Presentation, Hokkaido University, Sapporo, Japan (2022).
41. **J.C. Mauro**, “Model-Driven Design of Glass,” Invited Presentation, Hokkaido University, Sapporo, Japan (2022).
42. **J.C. Mauro**, “The Glass Transition,” Invited Webinar, American Ceramic Society (2022).
43. **J.C. Mauro**, “Decoding the Glass Genome,” Invited Seminar, University of Trento, Trento, Italy (2022).
44. **J.C. Mauro**, “Relaxation is Everywhere,” Invited Seminar, University of California—Davis, Davis, California (2022).
45. **J.C. Mauro**, “A Future of Glass,” Invited Presentation, National Day of Glass, Washington, DC (2022).
46. **J.C. Mauro**, “A Future of Glass,” Invited Presentation, Penn State Alumni Association (2022).
47. G. Macrelli, A.K. Varshneya, and **J.C. Mauro**, “Ultra-Thin Glass for Consumer Electronics and Photonics,” Invited Presentation, Università Ca' Foscari Venezia, Venice, Italy (2022).
48. K.A. Kirchner and **J.C. Mauro**, “Beyond the Average: Fluctuations in Glass-Forming Systems,” Invited Presentation, *International Congress on Glass*, Berlin, Germany (2022).
49. K. Doss and **J.C. Mauro**, “Nonexponential Relaxation of Glass,” Invited Presentation, *International Congress on Glass*, Berlin, Germany (2022).
50. **J.C. Mauro**, “Relaxation is Everywhere,” Invited Seminar, University of Wisconsin, Madison, Wisconsin (2021).
51. **J.C. Mauro**, “Research for the Glass Age,” Invited Seminar, Aalborg University, Aalborg, Denmark (2021).
52. **J.C. Mauro**, “Viscosity of Glass-Forming Systems: From Medieval Stained Glass Windows to Advanced Functional Glasses,” Invited Seminar, Duke University, Durham, North Carolina (2021).
53. **J.C. Mauro**, “A Future of Glass,” Invited Presentation, International Commission on Glass (ICG) Winter School (2021).
54. **J.C. Mauro**, “Materials Education in a Post-Pandemic World,” Invited Presentation, Workshop on Materials Science in a Post-Pandemic World, National

- Academies Defense Materials, Manufacturing and its Infrastructure Standing Committee (2020).
55. **J.C. Mauro**, “Machine Learning and Glass Formation,” Keynote Presentation, *Glass Problems Conference* (2020).
  56. **J.C. Mauro**, “Data-Driven Ceramics and Glass Research,” Joint MRS-ACerS Webinar (2020).
  57. **J.C. Mauro**, “Gordon S. Fulcher: Renaissance Man of Glass Science,” Invited Presentation, *Young Glass Researcher Summit* (2020).
  58. **J.C. Mauro**, “Relaxation is Everywhere,” Invited Colloquium, Iowa State University, Ames, Iowa (2020).
  59. **J.C. Mauro**, “Topological Pruning Enables Ultra-Low Rayleigh Scattering in Pressure-Quenched Silica Glass,” Keynote Presentation, Stanford Photonics Research Center, Stanford University, Palo Alto, California (2020).
  60. **J.C. Mauro**, “Glass Research at Penn State,” Invited Presentation, Restek Corporation, Bellefonte, Pennsylvania (2019).
  61. **J.C. Mauro**, “Relaxation is Everywhere,” Invited Presentation, Hokkaido University, Sapporo, Japan (2019).
  62. **J.C. Mauro**, “Glass Research at Penn State,” Invited Presentation, Hokkaido University, Sapporo, Japan (2019).
  63. **J.C. Mauro**, “My Life as an Industrial Researcher,” Invited Presentation, Hokkaido University, Sapporo, Japan (2019).
  64. **J.C. Mauro**, “Model-Driven Design of Gorilla Glass,” Plenary Presentation, *Tomorrow’s Products Today: The Data Revolution in Materials and Chemicals*, Manhattan, New York (2019).
  65. **J.C. Mauro**, “Fluctuations in Glass-Forming Systems,” Invited Presentation, *Materials Science & Technology*, Portland, Oregon (2019).
  66. K.A. Kirchner and **J.C. Mauro**, “Statistical Mechanical Modeling of Topological Fluctuations and the Adaptability of Glass-Forming Systems,” Invited Presentation, *Materials Science & Technology*, Portland, Oregon (2019).
  67. **J.C. Mauro**, “Decoding the Glass Genome,” Invited Presentation, *Materials Science & Technology*, Portland, Oregon (2019).
  68. **J.C. Mauro**, “A Future of Glass,” Invited Presentation, The Village at Penn State, State College, Pennsylvania (2019).
  69. **J.C. Mauro**, “Decoding the Glass Genome,” Plenary Presentation, Center for Hierarchical Materials Design, Northwestern University, Evanston, Illinois (2019).
  70. **J.C. Mauro**, “Materials Design,” Invited Presentation, *Workshop on Data Analytics and What it Means to the Materials Community*, Defense Materials Manufacturing and its Infrastructure (DMMI), National Academies, Washington, D.C. (2019).
  71. **J.C. Mauro**, “Dr. Arun K. Varshneya: Educator, Mentor, Scholar, Entrepreneur, and Philanthropist,” Invited Presentation, *25<sup>th</sup> International Congress on Glass*, Boston, Massachusetts (2019).
  72. Y. Yang, Y. Shin, S. Li, T.D. Bennett, A.C.T. van Duin, and **J.C. Mauro**, “Enabling Computational Design of ZIFs using ReaxFF,” Invited Presentation, *25<sup>th</sup> International Congress on Glass*, Boston, Massachusetts (2019).
  73. **J.C. Mauro**, “Decoding the Glass Genome,” Invited Presentation, The Ohio State University, Columbus, Ohio (2019).

74. **J.C. Mauro** and A.K. Varshneya, “A Future of Glass,” Invited Presentation, Ceramics Expo, Cleveland, Ohio (2019).
75. A.K. Varshneya and **J.C. Mauro**, “Applications of Glass: Past, Present, and Emerging,” Invited Presentation, Ceramics Expo, Cleveland, Ohio (2019).
76. **J.C. Mauro**, “Decoding the Glass Genome,” Keynote Presentation, Huawei International Mechanical Technology Summit, Yokohama, Japan (2018).
77. **J.C. Mauro**, “Alfred R. Cooper: The Melody Lingers On,” Invited Presentation, *Materials Science & Technology*, Columbus, Ohio (2018).
78. **J.C. Mauro**, “Grand Challenges for Machine Learning in Glass Science,” Invited Presentation, *Materials Science & Technology*, Columbus, Ohio (2018).
79. **J.C. Mauro**, “Viscosity of Glass-Forming Systems: From Medieval Stained Glass Windows to Advanced Functional Glasses,” Invited Presentation, *Materials Science & Technology*, Columbus, Ohio (2018).
80. **J.C. Mauro** and K.A. Kirchner, “Statistical Mechanical Modeling of Fluctuations in Glass-Forming Systems,” Invited Presentation, *Materials Science & Technology*, Columbus, Ohio (2018).
81. **J.C. Mauro**, O. Gulbitten, X. Guo, and O.N. Boratav, “Viscous Flow of Medieval Cathedral Glass,” Invited Presentation, *Materials Science & Technology*, Columbus, Ohio (2018).
82. **J.C. Mauro**, “Decoding the Glass Genome,” Invited Presentation, *Materials Science & Technology*, Columbus, Ohio (2018).
83. **J.C. Mauro**, L.D. Pye, K. Richardson, A.K. Varshneya, E.D. Zanotto, and M.K. Choudhary, “Glass Through the Ages,” Invited Presentation, *International Commission on Glass*, Yokohama, Japan (2018).
84. **J.C. Mauro**, “Decoding the Glass Genome,” Invited Presentation, *TMS Machine Learning for Materials Science*, Pittsburgh, Pennsylvania (2018).
85. **J.C. Mauro**, “Relaxation is Everywhere,” Invited Presentation, University of Pennsylvania, Philadelphia, Pennsylvania (2018).
86. **J.C. Mauro**, “Relaxation is Everywhere,” Invited Presentation, University of Rochester, Rochester, New York (2018).
87. **J.C. Mauro**, “Relaxation is Everywhere,” Invited Presentation, Case Western Reserve University, Cleveland, Ohio (2018).
88. **J.C. Mauro**, “Glass Transition and Relaxation Behavior,” Invited Presentation, *20<sup>th</sup> University Conference on Glass*, University Park, Pennsylvania (2018).
89. **J.C. Mauro**, “Topological Model for Glass Relaxation,” Invited Presentation, *American Ceramic Society Glass and Optical Materials Division Meeting*, San Antonio, Texas (2018).
90. M.K. Choudhary, **J.C. Mauro**, L.D. Pye, K. Richardson, A.K. Varshneya, and E.D. Zanotto, “Glass Through the Ages,” Invited Presentation, *American Ceramic Society Glass and Optical Materials Division Meeting*, San Antonio, Texas (2018).
91. **J.C. Mauro**, “Welcome to the Glass Age,” Invited Presentation, *American Ceramic Society Glass and Optical Materials Division Meeting*, San Antonio, Texas (2018).
92. T.K. Bechgaard, O. Gulbitten, **J.C. Mauro**, and M.M. Smedskjaer, “Temperature-Modulated Differential Scanning Calorimetry Analysis of High-Temperature Silicate Glasses,” Norbert J. Kreidl Award Lecture, *American Ceramic Society Glass and Optical Materials Division Meeting*, San Antonio, Texas (2018).

93. **J.C. Mauro**, “Decoding the Glass Genome,” Invited Presentation, American Ceramic Society Workshop on Data Informatics, Silver Spring, Maryland (2018).
94. **J.C. Mauro**, “Relaxation is Everywhere,” Invited Seminar, Lehigh University, Bethlehem, Pennsylvania (2017).
95. **J.C. Mauro**, “Relaxation is Everywhere,” Invited Seminar, SCHOTT AG, Mainz, Germany (2017).
96. **J.C. Mauro**, “Glass Research at Penn State,” Invited Seminar, SCHOTT AG, Mainz, Germany (2017).
97. **J.C. Mauro**, “Decoding the Glass Genome,” Invited Seminar, SCHOTT AG, Mainz, Germany (2017).
98. **J.C. Mauro**, “Atomic Scale Modeling of Glass Mechanics,” Invited Seminar, SCHOTT AG, Mainz, Germany (2017).
99. **J.C. Mauro**, “Glass Research at Penn State,” Invited Seminar, Zhejiang University, Hangzhou, China (2017).
100. **J.C. Mauro**, “Decoding the Glass Genome,” Invited Seminar, Asahi Glass Company, Yokohama, Japan (2017).
101. **J.C. Mauro**, “Frontiers in Chemically Strengthened Glass,” Invited Presentation, *7<sup>th</sup> International Workshop on Flow and Fracture of Advanced Glasses*, Aalborg, Denmark (2017).
102. **J.C. Mauro**, “Decoding the Glass Genome: Research for the Glass Age,” Sigma Pi Sigma Award Lecture, Coe College, Cedar Rapids, Iowa (2017).
103. **J.C. Mauro**, “Decoding the Glass Genome,” Plenary Talk, Materials Genome Initiative Workshop, National Science Foundation, Arlington, Virginia (2017).
104. **J.C. Mauro**, “Relaxation is Everywhere,” Invited Seminar, Cornell University, Ithaca, New York (2017).
105. **J.C. Mauro**, “Decoding the Glass Genome: Research for the Glass Age,” Invited Seminar, Alfred University, Alfred, New York (2017).
106. Q. Fu, **J.C. Mauro**, and M.N. Rahaman, “Glasses for Healthcare: Research, Development, and Industrialization,” Invited Presentation, *12<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology*, Waikoloa, Hawaii (2017).
107. Y. Yu, **J.C. Mauro**, and M. Bauchy, “Stretched Exponential Relaxation of Glasses: Origin of the Mixed Alkali Effect,” Norbert J. Kreidl Award Lecture, *12<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology*, Waikoloa, Hawaii (2017).
108. **J.C. Mauro**, “Relaxation is Everywhere,” Invited Presentation, Qilu University of Technology, Jinan, China (2017).
109. **J.C. Mauro**, “Decoding the Glass Genome,” Invited Presentation, Tongji University, Shanghai, China (2017).
110. **J.C. Mauro**, “Decoding the Glass Genome: Research for the Glass Age,” Invited Seminar, Rutgers University, Piscataway, New Jersey (2017).
111. **J.C. Mauro**, “Decoding the Glass Genome,” Materials Research Society Webinar (2017).
112. M. Reveil, A. Tandia, **J.C. Mauro**, K.D. Vargheese, S. Goyal, J. Luo, and P. Clancy, “Modeling Thermal Poling of Oxide Glasses using Molecular Dynamics,” Invited Presentation, Cornell University Glass Day, Ithaca, New York (2017).
113. **J.C. Mauro**, “Statistical Mechanics of Glass,” Plenary Lecture, *24<sup>th</sup> International Congress on Glass*, Shanghai, China (2016).

114. **J.C. Mauro**, A. Tandia, K.D. Vargheese, Y.Z. Mauro, and M.M. Smedskjaer, “Accelerating the Design of Functional Glasses through Modeling,” Plenary Lecture, *11<sup>th</sup> International Conference on Bulk Metallic Glasses*, St. Louis, Missouri (2016).
115. **J.C. Mauro**, “Decoding the Glass Genome: Research for the Glass Age,” Plenary Presentation, *Shandong Glass Symposium*, Jinan, China (2016).
116. **J.C. Mauro**, “Grand Challenges in Glass Science,” Invited Presentation, *Materials Science and Technology*, Salt Lake City, Utah (2016).
117. **J.C. Mauro**, “Grand Challenges in Glass Science,” Invited Presentation, *1<sup>st</sup> International Conference on Grand Challenges in Construction Materials*, Los Angeles, California (2016).
118. **J.C. Mauro**, “Fictive Temperature and the Glassy State,” Invited Presentation, *Wuhan Glass Summit*, Wuhan, China (2016).
119. **J.C. Mauro**, “Frontiers in Chemically Strengthened Glass,” Invited Presentation, Shanghai Institute of Ceramics Chinese Academy of Sciences (SICCAS), Shanghai, China (2016).
120. **J.C. Mauro**, “Decoding the Glass Genome,” Invited Presentation, South China University of Technology, Guangzhou, China (2016).
121. **J.C. Mauro**, “Decoding the Glass Genome,” Invited Presentation, Zhejiang University, Hangzhou, China (2016).
122. **J.C. Mauro**, “Decoding the Glass Genome,” Invited Presentation, Jushi Group, Jiaxing, China (2016).
123. **J.C. Mauro**, “Corning Science and Technology Overview,” Invited Presentation, Fudan University, Shanghai, China (2016).
124. B. Wang, Y. Yu, M. Wang, **J.C. Mauro**, and M. Bauchy, “Nano-Ductility in Silicate Glasses is Driven By Topological Heterogeneity,” *Invited Presentation, 40<sup>th</sup> International Conference and Exposition on Advanced Ceramics and Composites*, Daytona Beach, Florida (2016).
125. **J.C. Mauro**, “Glass Science in the United States: Current Status and Future Directions,” Invited Presentation, SLAC National Accelerator Laboratory, Stanford University, Menlo Park, California (2015).
126. **J.C. Mauro**, “What I Talk About When I Talk About the Glass Transition,” Richard M. Fulrath Award Lecture, *Materials Science & Technology*, Columbus, Ohio (2015).
127. R.E. Youngman, **J.C. Mauro**, and M.M. Smedskjaer, “Structure-Property Understanding in Oxide Glasses: A Look at Pyrex® and Related Borosilicate Glasses,” Invited Lecture, *Materials Science & Technology*, Columbus, Ohio (2015).
128. **J.C. Mauro**, K.D. Vargheese, and A. Tandia, “Molecular Dynamics Simulations of Ion-Exchanged Glass,” Invited Presentation, *Materials Science & Technology*, Columbus, Ohio (2015).
129. **J.C. Mauro**, “Frontiers in Chemically Strengthened Glass,” Invited Presentation, Wuhan University of Technology, Wuhan, China (2015).
130. **J.C. Mauro**, “Statistical Mechanics of Glass,” Invited Presentation, Massachusetts Institute of Technology, Cambridge, Massachusetts (2015).

131. **J.C. Mauro**, “Statistical Modeling of Glass in Industry,” Invited Presentation, *Unifying Concepts in Glass Physics VI*, Aspen, Colorado (2015).
132. **J.C. Mauro**, “Statistical Modeling of Glass in Industry,” Invited Presentation, University of Chicago, Chicago, Illinois (2015).
133. A. Tandia, K.D. Vargheese, and **J.C. Mauro**, “Data Driven Based Modeling for Glass Young’s Modulus,” Invited Presentation, University of Chicago, Chicago, Illinois (2015).
134. **J.C. Mauro**, “Statistical Mechanics of Glass,” Invited Presentation, Cornell University, Ithaca, New York (2015).
135. **J.C. Mauro**, “Statistical Mechanics of Glass,” Invited Presentation, Shanghai Institute of Optics and Fine Mechanics, Shanghai, China (2015).
136. **J.C. Mauro**, “Statistical Mechanics of Glass,” Invited Presentation, East China University of Science and Technology, Shanghai, China (2015).
137. **J.C. Mauro**, “Glass Relaxation is Everywhere,” Invited Presentation, Shanghai Jiao Tong University, Shanghai, China (2015).
138. **J.C. Mauro**, “Statistical Mechanics of Glass,” Invited Presentation, Wuhan University of Technology, Wuhan, China (2015).
139. **J.C. Mauro**, “Statistical Mechanics of Glass,” Invited Presentation, South China University of Technology, Guangzhou, China (2015).
140. **J.C. Mauro**, “Statistical Mechanics of Glass,” Invited Presentation, Washington University, St. Louis, Missouri (2015).
141. M.M. Smedskjaer and **J.C. Mauro**, “Effect of Boron Speciation on Diffusivity, Compressibility, and Mechanics of Borosilicate Glasses,” Invited Presentation, *XXIV International Materials Research Congress*, Cancun, Mexico (2015).
142. **J.C. Mauro**, “Relaxation is Everywhere,” Invited Presentation, Alfred R. Cooper Award Session, *Materials Science and Technology*, Pittsburgh, Pennsylvania (2014).
143. **J.C. Mauro**, “Statistical Mechanics of Glass,” Invited Presentation, *Materials Science and Technology*, Pittsburgh, Pennsylvania (2014).
144. **J.C. Mauro**, “A Topological Approach to Industrial Glass Research: From Simple Systems to Corning® Gorilla® Glass,” Invited Presentation, University of Cincinnati (2014).
145. **J.C. Mauro**, “Topological Constraint Theory of Glass,” Invited Presentation, RPI (2014).
146. M.M. Smedskjaer, M.N. Svenson, and **J.C. Mauro**, “Towards a Basis for the Properties of Compressed Inorganic Glasses,” Invited Presentation, *DGG-ACerS GOMD*, Aachen, Germany (2014).
147. **J.C. Mauro**, “Glass Science in the United States: Current Status and Future Directions,” Invited Presentation, *Corning Glass Summit*, Corning, New York (2014).
148. **J.C. Mauro**, “Statistical Mechanical Modeling of Glass,” Invited Presentation, *Corning Glass Summit*, Corning, New York (2014).
149. **J.C. Mauro**, “Topological Constraint Theory of Glass,” Invited Physics Colloquium, Rutgers University, Piscataway, New Jersey (2013).
150. M.M. Smedskjaer and **J.C. Mauro**, “Are the Dynamics of Silicate Glasses and Glass-Forming Liquids Embedded in their Elastic Properties?” Invited Presentation,

- 7<sup>th</sup> International Discussion Meeting on Relaxation in Complex Systems*, Barcelona, Spain (2013).
151. **J.C. Mauro** and Y. Yue, “Viscosity of Glass and Glass-Forming Liquids,” Invited Presentation, *7<sup>th</sup> International Discussion Meeting on Relaxation in Complex Systems*, Barcelona, Spain (2013).
  152. **J.C. Mauro** and M.M. Smedskjaer, “Two-Level Solutions to Exponentially Complex Problems in Glass Science,” Invited Presentation, *10<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology*, San Diego, California (2013).
  153. M.M. Smedskjaer, **J.C. Mauro**, and Y. Yue, “Understanding and Predicting the Properties of Complex Materials,” Invited Presentation, *10<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology*, San Diego, California (2013).
  154. M. Potuzak, R.C. Welch, and **J.C. Mauro**, “A Bifurcation of the Stretching Exponent  $\beta$  in Glass Confirmed Experimentally ( $\beta = 3/5$  for Stress Relaxation and  $\beta = 3/7$  for Structural Relaxation),” *10<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology*, San Diego, California (2013).
  155. **J.C. Mauro**, “Topological Constraint Theory of Glass,” Invited Presentation, *Materials Research Society Fall Meeting*, Boston, Massachusetts (2012).
  156. **J.C. Mauro**, “Relaxation is Everywhere,” Invited Graduate Seminar, Alfred University, Alfred, New York (2012).
  157. **J.C. Mauro**, “Future of Industrial Glass Research,” Sir Alastair Pilkington Award Lecture, *11<sup>th</sup> European Society of Glass Conference*, Maastricht, The Netherlands (2012).
  158. A. Tandia, K.D. Vargheese, **J.C. Mauro**, and A.K. Varshneya, “Molecular Dynamics Simulations of Network Dilation Anomaly in Ion-Exchanged Glass,” Invited Presentation, *American Ceramic Society Glass and Optical Material Division Meeting*, St. Louis, Missouri (2012).
  159. **J.C. Mauro**, “Temperature-Dependent Constraint Model of Borate Glasses,” Invited Presentation, *7<sup>th</sup> International Conference on Borate Glasses, Crystals, and Melts*, Halifax, Canada (2011).
  160. M.M. Smedskjaer, **J.C. Mauro**, and Y. Yue, “Predicting the Hardness of Glass Surfaces,” Invited Presentation, *Materials Science & Technology Conference*, Columbus, Ohio (2011).
  161. M.M. Smedskjaer, **J.C. Mauro**, and Y. Yue, “Understanding Glass Hardness from Constraint Theory,” Invited Presentation, *American Ceramic Society Glass and Optical Material Division Meeting*, Savannah, Georgia (2011).
  162. Y. Yue, C. Zhang, L. Hu, and **J.C. Mauro**, “Abnormal Dynamics of Metallic Glass-Forming Liquids,” Invited Presentation, *American Ceramic Society Glass and Optical Material Division Meeting*, Savannah, Georgia (2011).
  163. **J.C. Mauro**, “Future of Glass and Glass Research,” Invited Opening Keynote Lecture, Shandong Glass Symposium, Jinan, China (2011).
  164. **J.C. Mauro**, “Quantitative Design of Glass Using Constraint Theory,” Invited Presentation, Key Laboratory of Liquid Structure and Heredity of Materials, Shandong University, Jinan, China (2011).
  165. **J.C. Mauro**, “Temperature-Dependent Constraint Theory of Glass,” Vittorio Gottardi Memorial Prize Lecture, *International Commission on Glass Annual Meeting*, Shenzhen, China (2011).

166. **J.C. Mauro**, D.C. Allan, and M. Potuzak, “Nonequilibrium Viscosity of Glass,” Invited Presentation, State Key Laboratory of Silicate Materials Science and Engineering, Wuhan University of Technology, Wuhan, China (2011).
167. D.C. Allan, **J.C. Mauro**, Y. Yue, A.J. Ellison, P.K. Gupta, and M. Potuzak, “Modeling Equilibrium and Nonequilibrium Viscosity of Glass,” Invited Presentation, *5th International Workshop on Flow and Fracture of Advanced Glasses*, St-Malo, France (2011).
168. L. Hu, C. Zhang, Y. Yue, and **J.C. Mauro**, “Fragile-to-Strong (F-S) Transition in Metallic Glass-Forming Liquids,” Invited Presentation, *5th International Workshop on Flow and Fracture of Advanced Glasses*, St-Malo, France (2011).
169. Q. Zheng, **J.C. Mauro**, A.J. Ellison, M. Potuzak, and Y. Yue, “Universality of the High Temperature Viscosity Limit of Glass-Forming Liquids,” Invited Presentation at Shandong Polytechnic University, Jinan, China (2011).
170. **J.C. Mauro**, “Recent Advances in Liquid and Glassy Dynamics,” W.A. Weyl Award Lecture, *XXII International Congress on Glass*, Bahia, Brazil (2010).
171. **J.C. Mauro**, “Viscosity of Glass-Forming Liquids,” Invited Lecture, *Microstructure and Dynamics of Inorganic Glasses*, Aalborg, Denmark (2010).
172. **J.C. Mauro**, “Topological Constraint Theory,” Invited Lecture, *Microstructure and Dynamics of Inorganic Glasses*, Aalborg, Denmark (2010).
173. Y. Yue, C. Zhang, L. Hu, and **J.C. Mauro**, “Normal and ‘abnormal’ dynamics of oxide/non-oxide glassformers (with emphasis on metallic systems),” Invited Lecture, *17th International Symposium on Non-Oxide and New Optical Glasses*, Ningbo, China (2010).
174. Y. Yue and **J.C. Mauro**, “Progress in Rheology of Inorganic Glass-Forming Melts,” Invited Lecture, *Glass and Optical Materials Division Meeting of the American Ceramic Society*, Corning, NY (2010).
175. P.K. Gupta and **J.C. Mauro**, “Landscape View of Sub- $T_g$  Relaxation,” Invited Lecture, *Glass and Optical Materials Division Meeting of the American Ceramic Society*, Corning, NY (2010).
176. M.M. Smedskjaer, **J.C. Mauro**, J. Deubener, and Y. Yue, “Diffusion of Alkali and Alkaline Earth Ions in Silicate Glasses and its Correlation with Liquid Fragility,” Invited Lecture, *Glass and Optical Materials Division Meeting of the American Ceramic Society*, Corning, NY (2010).
177. Y. Yue, C. Zhang, L. Hu, and **J.C. Mauro**, “Fragile-to-Strong Transition: A Possibly Universal Feature of Metallic Glass-Forming Liquids,” Invited Keynote Lecture, *10th International Workshop on Non-Crystalline Solids*, Barcelona, Spain (2010).
178. **J.C. Mauro**, “Corning Overview and Recent Advances in the Liquid and Glassy Dynamics,” Invited Keynote Lecture, *Danish Glass Symposium*, Aalborg, Denmark (2010).
179. **J.C. Mauro**, “Nonequilibrium Viscosity of Glass,” Invited Materials Science and Engineering Seminar, Rensselaer Polytechnic Institute, Troy, NY (2009).
180. **J.C. Mauro**, “A Physical Approach to Industrial Glass Research,” Alfred R. Cooper Lecture, MS&T, Pittsburgh, PA (2009).

181. **J.C. Mauro**, “Corning Science and Technology Overview,” Invited Undergraduate Materials Science and Engineering Seminar, Ohio State University, Columbus, OH (2009).
182. **J.C. Mauro**, “Nonequilibrium Viscosity of Glass,” Invited Physics Colloquium at University of Cincinnati, Cincinnati, OH (2009).
183. P.K. Gupta and **J.C. Mauro**, “Sub- $T_g$  Relaxation: Structural and Iso-structural Processes,” Invited Talk at the *XII Conference on the Physics of Non-Crystalline Solids*, Foz do Iguaçu, Brazil (2009).
184. **J.C. Mauro**, P.K. Gupta, and R.J. Loucks, “Topological Modeling of Glass-Forming Systems using Temperature-Dependent Constraints,” Invited Talk at the *Glass and Entropy II Workshop*, Aberystwyth, Wales (2009).
185. **J.C. Mauro**, P.K. Gupta, and R.J. Loucks, “Continuously Broken Ergodicity and the Glass Transition,” Invited Seminar, Aalborg University, Aalborg, Denmark (2008).
186. **J.C. Mauro** and R.J. Loucks, “Fragility in the Enthalpy Landscape Approach,” Invited Seminar, Aalborg University, Aalborg, Denmark (2008).
187. **J.C. Mauro** and P.K. Gupta, “On the Relationship Between Fragility and Stretching,” Invited Seminar, Aalborg University, Aalborg, Denmark (2008).
188. **J.C. Mauro**: “Advancing Glasses through Fundamental Research”; “Continuously Broken Ergodicity and the Glass Transition”; “Fragility in the Enthalpy Landscape Approach”; “On the Relationship Between Fragility and Stretching;” and “The Physics of Fictive Temperature,” Invited Seminar, SCHOTT AG, Mainz, Germany (2008).
189. **J.C. Mauro**, P.K. Gupta, R.J. Loucks, and A.K. Varshneya, “Broken Ergodicity of Continuously Cooled Glasses,” Invited Talk at the *Glass and Entropy Workshop*, Trencin, Slovakia (2008).
190. R.J. Araujo and **J.C. Mauro**, “The Thermodynamic Significance of Order Parameters,” Invited Talk at the *Glass and Entropy Workshop*, Trencin, Slovakia (2008).
191. P.K. Gupta and **J.C. Mauro**, “Configurational Entropy of Glass,” Invited Talk, GOMD-S1-058-2008, *Glass and Optical Materials Division Meeting of the American Ceramic Society*, Tucson, AZ (2008).
192. **J.C. Mauro** and L. Wondraczek, “Advancing Glasses through Fundamental Research,” Invited Talk at the Workshop *Advanced Materials and Innovative Glass Melting Technology in the Year 2020*, Brig, Switzerland (2008).
193. R.J. Loucks, **J.C. Mauro**, and P.K. Gupta, “Landscapes, Glasses, and the Master Equations,” Invited Graduate Seminar, Alfred University, Alfred, NY (2007).
194. **J.C. Mauro**, P.K. Gupta, and R.J. Loucks, “Continuously Broken Ergodicity and the Glass Transition,” Invited Talk at the CECAM Workshop *Glass Meets Glass: Reconciling Views*, Lyon, France (2007).
195. **J.C. Mauro**, P.K. Gupta, and R.J. Loucks, “Entropy and the Glass Transition,” Invited Graduate Seminar, Alfred University (2007).
196. **J.C. Mauro**, “Multiscale Modeling of Covalent Glasses,” Invited Symposium at Ohio State University (2007).
197. **J.C. Mauro**, “Multiscale Modeling of Chalcogenides,” Invited Seminar at the University of Montréal (2006).

198. **J.C. Mauro** and A.K. Varshneya, “Monte Carlo Simulation of Atomic Displacements During Indentation of Chalcogenide Glass,” Invited Talk at the *Society of Glass Technology/European Society of Glass Annual Meeting*, Sunderland, UK (2006).
199. **J.C. Mauro**, “A New Model of the Glass Transition,” Norbert J. Kreidl Award Lecture, *Glass and Optical Materials Division Meeting of the American Ceramic Society*, Greenville, SC (2006).
200. **J.C. Mauro** and A.K. Varshneya, “*Ab Initio* Modeling of Chalcogenide Glass Structures,” *XV International Symposium on Non-Oxide and New Optical Glasses*, Invited Talk IT-4, Bangalore, India (2006).
201. **J.C. Mauro**, “Multiscale Modeling of Chalcogenides,” College of Engineering Graduate Seminar, Alfred University (2006).
202. R.J. Loucks, **J.C. Mauro**, J. Balakrishnan, and A.K. Varshneya, “Energy Landscapes and the Glass Transition,” Invited Presentation to the Chemistry Department at Alfred University (2006).
203. J. Balakrishnan, **J.C. Mauro**, and P. Diep, “Studies in Biophysics and the Glass Transition”, Invited Talk at the Department of Chemical and Biomolecular Engineering, Cornell University (2006).
204. **J.C. Mauro**, “Multiscale Modeling of Chalcogenides,” Invited Talk to the Multiscale Materials Modeling Research Group, Massachusetts Institute of Technology (2005).
205. **J.C. Mauro**, “Multiscale Modeling of Chalcogenides,” Invited Talk at the Center for Materials Research, Cornell University (2005).
206. **J.C. Mauro**, “Modeling and Simulation at Corning Incorporated,” Invited Undergraduate Engineering Seminar at Alfred University (2005).
207. **J.C. Mauro**, “Inherent Structures, Inverse Melting, and Kauzmann Curves,” Invited Presentation to the CES 585 (Glass Transition Range Behavior) Class at Alfred University (2005).
208. **J.C. Mauro**, “Thermodynamic Models of the Glass Transition,” Invited Presentation to the CES 585 (Glass Transition Range Behavior) Class at Alfred University (2005).
209. **J.C. Mauro**, “Modeling and Simulation at Corning Incorporated,” Invited Freshman Engineering Seminar at Alfred University (2004).

### CONTRIBUTED PRESENTATIONS

1. G. Macrelli, A.K. Varshneya, and **J.C. Mauro**, “Thermodynamics and Kinetics of Ion Exchange in Silicate Glasses,” Society of Glass Technology Annual Meeting, Cambridge, United Kingdom (2025).
2. E. Aichele, N. Clark, and **J.C. Mauro**, “Glass-Refractory Interactions with Industrial Scaleup of LionGlass,” 16<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology, Vancouver, Canada (2025).
3. M. Eltantawy, A. Shearer, U.G.A. Sanjeevani, Y.-L. Liao, **J.C. Mauro**, S.-F. Wang, and M. Lanagan, “Alkali Modified Borosilicate Glass-SiO<sub>2</sub> Composites for

- Electronic Packaging and High Frequency Applications,” 16<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology, Vancouver, Canada (2025).
4. A. Bossen and **J.C. Mauro**, “On the Origins of Fragility in Sodium Borosilicate Glass and its Influence on Structural Relaxation,” 16<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology, Vancouver, Canada (2025).
  5. A. Shearer and **J.C. Mauro**, “Characterization of Germano-Aluminate Glasses for Mid-Infrared Applications,” 16<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology, Vancouver, Canada (2025).
  6. B. Hauke and **J.C. Mauro**, “Relaxation Behavior of Sodium Aluminosilicate Glasses from Modulated Differential Scanning Calorimetry,” 16<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology, Vancouver, Canada (2025).
  7. E. Maeda, R.S. Welch, F. Lodesani, and **J.C. Mauro**, “Influence of Atomic Surface Structure on Nepheline Crystallization in Glass,” International Congress on Glass, Kolkata, India (2024).
  8. A.M. Bossen, N.L. Clark, B.M. Hauke, R.A. Kimel, and **J.C. Mauro**, “STEM and Stemware: A Case Study for Outreach and Education Across Traditional Crafts and Materials Science,” Materials Science and Technology, Pittsburgh, Pennsylvania (2024).
  9. A.M. Bossen and **J.C. Mauro**, “A Re-Evaluation of the Adam-Gibbs Model within an Enthalpy Landscape,” University Conference on Glass, Alfred, New York (2024).
  10. J. Chen, N.L. Clark, and **J.C. Mauro**, “LionGlass™: A Zinc Aluminosilicophosphate (ZASP) Glass that Reduces Carbon Emissions by 65%,” Materials Science and Technology, Pittsburgh, Pennsylvania (2024).
  11. E. Aichele and **J.C. Mauro**, “Glass-Refractory Interactions with Industrial Scaleup of LionGlass,” Materials Science and Technology, Pittsburgh, Pennsylvania (2024).
  12. B.M. Hauke and **J.C. Mauro**, “Studying Enthalpy Relaxation of Sodium Aluminosilicate Glasses Using Modulated Differential Scanning Calorimetry,” Materials Science and Technology, Pittsburgh, Pennsylvania (2024).
  13. A. Shearer and **J.C. Mauro**, “Dielectric and Electrical Transport Properties of Alkaline Vanadate Glasses,” Materials Science and Technology, Pittsburgh, Pennsylvania (2024).
  14. S. Becerra and **J.C. Mauro**, “Investigating the Effect Poly(methyl methacrylate) Coatings on Glass Strength via the Ball on 3 Ball Method,” Materials Science and Technology, Pittsburgh, Pennsylvania (2024).
  15. J. Sly and **J.C. Mauro**, “Exploring Aluminoborate Glass Dissolution to Advance Personalized Healing,” University Conference on Glass, Alfred, New York (2024).
  16. B.M. Hauke, N.C. Lusk, and **J.C. Mauro**, “Studying Relaxation of Sodium Aluminosilicate Glasses via Modulated Differential Scanning Calorimetry,” University Conference on Glass, Alfred, New York (2024).
  17. D. Yin and **J.C. Mauro**, “Statistical Model of Synchronized Cooperative Motion in Glass-Forming Liquids,” University Conference on Glass, Alfred, New York (2024).
  18. R.S. Welch and **J.C. Mauro**, “Elucidating the Elusive Oxygen Tricluster in Aluminosilicate Glasses,” University Conference on Glass, Alfred, New York (2024).

19. S. Traugh and **J.C. Mauro**, “Solvent and Thickness Dependence on Strength of Poly(methyl methacrylate) Coatings on Glass via Ball on 3 Ball Method,” University Conference on Glass, Alfred, New York (2024).
20. A. Shearer and **J.C. Mauro**, “Structure and Properties of Alkaline Earth Vanadate Glasses,” University Conference on Glass, Alfred, New York (2024).
21. C. Han and **J.C. Mauro**, “Computational Investigations of Nucleation in Binary Barium Silicate Systems,” University Conference on Glass, Alfred, New York (2024).
22. M. Montazerian and **J.C. Mauro**, “Glass-Ceramics in Healthcare,” University Conference on Glass, Alfred, New York (2024).
23. E. Maeda, R.S. Welch, F. Lodesani, and **J.C. Mauro**, “Influence of Atomic Surface Structure on Nepheline Crystallization in Glass,” American Ceramic Society Glass and Optical Materials Division Annual Meeting, Las Vegas, Nevada (2024).
24. R.S. Welch, T. Salrin, T. Greiner, C. Bragatto, and **J.C. Mauro**, “High-Coordinated Alumina and Oxygen Tricluster Formation in Molecular Dynamics Simulations of Magnesium Aluminosilicate Glass Structure,” International Commission on Glass Annual Meeting, Incheon, Korea (2024).
25. R. Rodriguez Cano, M.T. Lanagan, N.L. Clark, and **J.C. Mauro**, “Novel Glass Material with Low Loss and Permittivity for 5G/6G Integrated Circuits,” ITNC-USNC-URSI Radio Science Meeting, Florence, Italy (2024).
26. R.S. Welch, T. Salrin, T. Greiner, C. Bragatto, and **J.C. Mauro**, “High-Coordinated Alumina and Oxygen Tricluster Formation in Molecular Dynamics Simulations of Magnesium Aluminosilicate Glass Structure,” *International Commission on Glass Annual Meeting*, Incheon, South Korea (2024).
27. H. Liu, A. Ogrinc, Y. Lin, C. Wilkinson, K. Doss, A. Fry, C. Qu, H. He, T. Gross, N. Smith, **J.C. Mauro**, and S. Kim, “Mixed Modifier Effects on Structural, Mechanical, Chemical, and Mechanochemical Properties of Sodium Calcium Aluminosilicate Glass,” *Materials Science and Technology*, Columbus, Ohio (2023).
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131. M. He, J.R. Matthews, R.A. Bellman, K.L. Simonton, W. Niu, A.L. Wallace, J. Hu, D.N. Schissel, T.E. Myers, M.J. Winningham, **J.C. Mauro**, H.-H. Fong, W.-Y. Lee, and Z. Bao, “Development of New Polymeric Semiconductor Materials: Characterization, Performance, and Substrate Studies,” *International Conference on Flexible and Printed Electronics*, Jeju Island, Korea (2013).
132. Z. Tang, **J.C. Mauro**, M.B. Abrams, G. Hu, N. Venkataraman, and L.R. Zoeller, “High-Speed Camera Study of Stage III Crack Propagation in Strengthened Glass,” *10<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology*, San Diego, California (2013).
133. X. Guo, **J.C. Mauro**, and D.C. Allan, “Glass Transition and Relaxation from TMDSC Simulations,” *10<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology*, San Diego, California (2013).
134. E.A. King, D.C. Allan, D. Zhao, and **J.C. Mauro**, “Network Dilation in Alkali Aluminosilicate Glass via Direct Strain Measurements,” *10<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology*, San Diego, California (2013).
135. W.-Y. Lee, D. Käfer, G. Giri, Y. Diao, S.C.B. Mannself, C.J. Tassone, Z. Bao, M. He, J.R. Matthews, **J.C. Mauro**, R.A. Bellman, K.L. Simonton, and H.H. Fong, “High-Performance Low-Voltage Organic Field-Effect Transistors on Robust Gorilla Glass,” *Materials Research Society Spring Meeting*, San Francisco, California (2013).
136. G.S. Glaesemann, R. Borguess, and **J.C. Mauro**, “The Strength of Thin Fusion-Drawn Glass Sheets,” *11<sup>th</sup> European Society of Glass Conference*, Maastricht, The Netherlands (2012).
137. S. Striepe, M.M. Smedskjaer, U. Bauer, H. Behrens, J. Deubener, R.E. Youngman, M. Potuzak, **J.C. Mauro**, and Y. Yue, “Hardness and Crack Behavior of Compressed Borate Glasses,” *11<sup>th</sup> European Society of Glass Conference*, Maastricht, The Netherlands (2012).
138. Q. Zheng, M. Potuzak, **J.C. Mauro**, M.M. Smedskjaer, A.J. Ellison, R.E. Youngman, and Y. Yue, “Structure-Property Relationship and the Mixed Network Former Effect in Boroaluminosilicate Glasses,” *11<sup>th</sup> European Society of Glass Conference*, Maastricht, The Netherlands (2012).
139. M.M. Smedskjaer, **J.C. Mauro**, X. Guo, S.A. Saxton, and A.J. Ellison, “Predicting the Photoelastic Response of Silicate Glasses,” *American Ceramic Society Glass and Optical Material Division Meeting*, St. Louis, Missouri (2012).
140. X. Guo, **J.C. Mauro**, D.C. Allan, R.L. Stewart, and Y. Yue, “Insights into Glass Transition and Relaxation Behavior using Temperature-Modulated Differential Scanning Calorimetry,” *American Ceramic Society Glass and Optical Material Division Meeting*, St. Louis, Missouri (2012).

141. M.M. Smedskjaer, U. Bauer, H. Behrens, S. Striepe, J. Deubener, R.E. Youngman, M. Potuzak, **J.C. Mauro**, and Y. Yue, "Structure and Properties of Compressed Borate Glasses," *American Ceramic Society Glass and Optical Material Division Meeting*, St. Louis, Missouri (2012).
142. Q. Zheng, R.E. Youngman, C.L. Hogue, **J.C. Mauro**, M. Potuzak, A.J. Ellison, M.M. Smedskjaer, and Y. Yue, "Structure of Boroaluminosilicate Glasses with Varying Al<sub>2</sub>O<sub>3</sub> Content," *Materials Science & Technology Conference*, Columbus, Ohio (2011).
143. **J.C. Mauro**, S. Raghavan, and A.B. Ruffin, "Suppression of Stimulated Brillouin Scattering through Multi-Tone Phase Modulation," *American Ceramic Society Glass and Optical Material Division Meeting*, Savannah, Georgia (2011).
144. X. Wu, Q. Zheng, **J.C. Mauro**, M. Potuzak, A.J. Ellison, and R. Dieckmann, "Diffusion of Sodium in Sodium Boroaluminosilicate Glasses: Impact of Mixed Network Formers and the Influence of Water," *American Ceramic Society Glass and Optical Material Division Meeting*, Savannah, Georgia (2011).
145. X. Guo, M. Potuzak, **J.C. Mauro**, D.C. Allan, T.J. Kiczenski, Y. Yue, and R. Stewart, "Generalized Thermodynamic Approach for Determining the Fictive Temperature of Glasses with Arbitrary Thermal History," *American Ceramic Society Glass and Optical Material Division Meeting*, Savannah, Georgia (2011).
146. M. Potuzak, **J.C. Mauro**, T.J. Kiczenski, A.J. Ellison, and D.C. Allan, "Resolving the Vibrational and Configurational Contributions to Thermal Expansion in Isobaric Glass-Forming Systems," *American Ceramic Society Glass and Optical Material Division Meeting*, Savannah, Georgia (2011).
147. R.J. Loucks, **J.C. Mauro**, and S. Sen, "Heat Capacity, Enthalpy Fluctuations, and Configurational Entropy in Broken Ergodic Systems," *American Ceramic Society Glass and Optical Material Division Meeting*, Savannah, Georgia (2011).
148. Q. Zheng, **J.C. Mauro**, A.J. Ellison, M. Potuzak, and Y. Yue, "Universality of the High Temperature Viscosity Limit of Glass-Forming Liquids," *American Ceramic Society Glass and Optical Material Division Meeting*, Savannah, Georgia (2011).
149. Q. Zheng, R.E. Youngman, C.L. Hogue, **J.C. Mauro**, M. Potuzak, A.J. Ellison, M.M. Smedskjaer, and Y. Yue, "Structure and Topology of Na<sub>2</sub>O-B<sub>2</sub>O<sub>3</sub>-Al<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub> Mixed Network Glasses," *American Ceramic Society Glass and Optical Material Division Meeting*, Savannah, Georgia (2011).
150. M.M. Smedskjaer, **J.C. Mauro**, and Y. Yue, "Predicting the Composition Dependence of Glass Hardness," *5th International Workshop on Flow and Fracture of Advanced Glasses*, St-Malo, France (2011).
151. M.M. Smedskjaer, **J.C. Mauro**, S. Sen, and Y. Yue, "Network Topology in Soda Lime Borate Glass Systems," *XXII International Congress on Glass*, Bahia, Brazil (2010).
152. **J.C. Mauro** and U. Fotheringham, "TC27: Atomistic Modeling and Simulation of Glass," *XXII International Congress on Glass*, Bahia, Brazil (2010).
153. **J.C. Mauro**, S. Soyer Uzun, W. Bras, and S. Sen, "Nonmonotonic Evolution of Density Fluctuations During Glass Relaxation," *Glass and Optical Materials Division Meeting of the American Ceramic Society*, Corning, NY (2010).

154. **J.C. Mauro**, Y. Yue, A.J. Ellison, P.K. Gupta, and D.C. Allan, "Viscosity of Glass-Forming Liquids," *Glass and Optical Materials Division Meeting of the American Ceramic Society*, Corning, NY (2010).
155. R.J. Loucks and **J.C. Mauro**, "Fictive Temperature and the Glassy State," *Glass and Optical Materials Division Meeting of the American Ceramic Society*, Corning, NY (2010).
156. R.J. Loucks, **J.C. Mauro**, and P.K. Gupta, "Achieving Long Time Scales in Energy Landscape Simulations using Metabasin Partitioning," *Glass and Optical Materials Division Meeting of the American Ceramic Society*, Corning, NY (2010).
157. B.D. Esham, **J.C. Mauro**, R.J. Loucks, and G.J. McGowan, "The Application of Constraint Theory to Self-Organization of Naturally Occurring Molecules," *Glass and Optical Materials Division Meeting of the American Ceramic Society*, Corning, NY (2010).
158. B.D. Esham, **J.C. Mauro**, S. Sen, R.J. Loucks, and G.J. McGowan, "Heat Capacity, Enthalpy Fluctuations, and Configurational Entropy in Broken Ergodic Systems," *Glass and Optical Materials Division Meeting of the American Ceramic Society*, Corning, NY (2010).
159. D.C. Allan, **J.C. Mauro**, and M. Potuzak, "Modeling the Nonequilibrium Viscosity of Glass," *Glass and Optical Materials Division Meeting of the American Ceramic Society*, Corning, NY (2010).
160. R.J. Araujo and **J.C. Mauro**, "The Thermodynamic Significance of Order Parameters," *Glass and Optical Materials Division Meeting of the American Ceramic Society*, Corning, NY (2010).
161. K.D. Vargheese, A. Tandia, and **J.C. Mauro**, "Origin of Dynamical Heterogeneities in Calcium Aluminosilicate Liquids," *Glass and Optical Materials Division Meeting of the American Ceramic Society*, Corning, NY (2010).
162. **J.C. Mauro**, P.K. Gupta, and R.J. Loucks, "Topological Modeling of Glass-Forming Systems using Temperature-Dependent Constraints," Invited Talk at the *Workshop on Topology, Structure, and Dynamics in Non-Crystalline Solids*, Paris, France (2009).
163. **J.C. Mauro**, P.K. Gupta, and R.J. Loucks, "Composition Dependence of Glass Transition Temperature and Fragility: A Topological Model," *8<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology*, Vancouver, Canada (2009).
164. R.J. Loucks and **J.C. Mauro**, "Impact of Fragility on Enthalpy Relaxation in Glass," *8<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology*, Vancouver, Canada (2009).
165. R.J. Loucks and **J.C. Mauro**, "Forbidden Glasses and the Failure of Fictive Temperature," *8<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology*, Vancouver, Canada (2009).
166. **J.C. Mauro** and P.K. Gupta, "Two Factors Governing Fragility: Stretching Exponent and Configurational Entropy," *8<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology*, Vancouver, Canada (2009).
167. **J.C. Mauro**, D.C. Allan, and M. Potuzak, "Modeling the Nonequilibrium Viscosity of Glass," *8<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology*, Vancouver, Canada (2009).

168. **J.C. Mauro** and P.K. Gupta, "On the Relationship Between Fragility and Stretching," Oral Presentation, International Workshop on *Fragility of Viscous Liquids: Cause(s) and Consequences*, Copenhagen, Denmark (2008).
169. **J.C. Mauro** and R.J. Loucks, "Fragility in the Enthalpy Landscape Approach," Poster Presentation, International Workshop on *Fragility of Viscous Liquids: Cause(s) and Consequences*, Copenhagen, Denmark (2008).
170. **J.C. Mauro**, P.K. Gupta, and R.J. Loucks, "Continuously Broken Ergodicity and the Glass Transition," GOMD-S1-059-2008, *Glass and Optical Materials Division Meeting of the American Ceramic Society*, Tucson, AZ (2008).
171. R.J. Loucks and **J.C. Mauro**, "Enthalpy Landscape Model of the Selenium Glass Transition," GOMD-S1-066-2008, *Glass and Optical Materials Division Meeting of the American Ceramic Society*, Tucson, AZ (2008).
172. D.C. Allan, **J.C. Mauro**, and P.K. Gupta, "Phenomenological Glass Compaction Models: Recent Developments," GOMD-S1-057-2008, *Glass and Optical Materials Division Meeting of the American Ceramic Society*, Tucson, AZ (2008).
173. P.K. Gupta and **J.C. Mauro**, "Entropy Change at the Glass Transition," Oral Presentation (P15), *XXI International Congress on Glass*, Strasbourg, France (2007).
174. R.J. Loucks, **J.C. Mauro**, J. Balakrishnan, S. Raghavan, "New Numerical Techniques for Simulation of Glass-Forming Systems," Oral Presentation (C7), *XXI International Congress on Glass*, Strasbourg, France (2007).
175. J. Balakrishnan, **J.C. Mauro**, R.J. Loucks, and S. Raghavan, "A Definition of Fictive Temperature from Statistical Mechanics," Oral Presentation (P16), *XXI International Congress on Glass*, Strasbourg, France (2007).
176. J. Balakrishnan, **J.C. Mauro**, R.J. Loucks, and S. Raghavan, "Validity of Thermorheological Simplicity during Glass Transition," Poster Presentation (P22), *XXI International Congress on Glass*, Strasbourg, France (2007).
177. **J.C. Mauro**, R.J. Loucks, J. Balakrishnan, and A.K. Varshneya, "Predictive Modeling of Glass Properties with Nonequilibrium Statistical Mechanics," Oral Presentation (C4), *XXI International Congress on Glass*, Strasbourg, France (2007).
178. P.K. Gupta and **J.C. Mauro**, "Broken Ergodicity and the Laboratory Glass Transition," *Glass and Optical Materials Division Meeting of the American Ceramic Society* (GOMD-S5-009-2007), Rochester, NY (2007).
179. A. Tandia, N. Timofeev, **J.C. Mauro**, and R.J. Loucks, "Semi-Empirical Technique for Computation of Glass Density," *Glass and Optical Materials Division Meeting of the American Ceramic Society* (GOMD-S1-010-2007), Rochester, NY (2007).
180. R.J. Loucks, **J.C. Mauro**, J. Balakrishnan, and S. Raghavan, "Enthalpy Landscapes and the Glass Transition," *Glass and Optical Materials Division Meeting of the American Ceramic Society* (GOMD-S1-009-2007), Rochester, NY (2007).
181. A.K. Varshneya, **J.C. Mauro**, and D.J.C. Mauro, "Structure Dependence of Elasticity and Plasticity in Chalcogenide Glasses: Experiment and *Ab Initio* Modeling," *XI Conference on the Physics of Non-Crystalline Solids*, Oral Presentation O-TMP-10, Rhodes, Greece (2006).
182. **J.C. Mauro** and A.K. Varshneya, "Nonequilibrium Statistical Mechanical Model of Structural Relaxation in Glass," *XV International Symposium on Non-Oxide and New Optical Glasses*, Oral Presentation OP-2, Bangalore, India (2006).

183. **J.C. Mauro**, R.J. Loucks, J. Balakrishnan, and A.K. Varshneya, "Mapping the Potential Energy Landscapes of Chalcogen Systems," *XV International Symposium on Non-Oxide and New Optical Glasses*, Oral Presentation OP-1, Bangalore, India (2006).
184. J. Balakrishnan, D. Heine, A. Rammohan, S. Raghavan, and **J.C. Mauro**, "Hierarchical Dynamical Models of Lipid Bilayers Interacting with Surfaces," *American Chemical Society Spring National Meeting*, Atlanta, GA (2006).
185. J. Balakrishnan, D. Heine, A. Rammohan, S. Raghavan, and **J.C. Mauro**, "Multiscale Modeling of Supported Lipid Bilayers," *50<sup>th</sup> Biophysical Society Annual Meeting*, Salt Lake City, UT (2006).
186. **J.C. Mauro** and A.K. Varshneya, "*Ab Initio* Modeling of Glasses in the Sulfur-Selenium System," *6<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology*, Kapalua, HI (2005).
187. **J.C. Mauro**, S. Raghavan, M. Rukosueva, C. Stefanini, and S. Ten, "Impact of OADMs on 40 Gb/s Transmission with Alternative Modulation Formats," *European Conference on Optical Communication*, We4.P.93, Rimini, Italy (2003).
188. J. Hurley, S. Kumar, **J.C. Mauro**, S. Raghavan, and S. Ten, "Critical Issues in the Modeling of WDM Systems in the Linear and Nonlinear Regimes," *Optical Fiber Communications Conference*, pp. 579-580, Anaheim, CA (2003).
189. S. Raghavan, and **J.C. Mauro**, "Optimization of Optical and Electrical Filter Bandwidths for Alternate Modulation Formats in 40 Gb/s ASE-Limited Systems," *European Conference on Optical Communication*, Paper 10.6.1, Copenhagen, Denmark (2002).
190. **J.C. Mauro** and D.Q. Chowdhury, "Computer Simulation of Modulation Instability in Optically Amplified Systems," *Glass and Optical Materials Division Meeting of the American Ceramic Society*, Corning, NY (2000).

#### **ACADEMIC AWARDS AND HONORS (as a student)**

1. General Electric (GE) Excellence in Glass Award
2. Dr. Richard C. Martin Outstanding Senior Award, Alfred University
3. Ceramic Engineering and Materials Science (CEMS) Outstanding Senior Award
4. Ceramic Engineering and Materials Science (CEMS) Outstanding Junior Award
5. Ceramic Association of New York (CANY) Scholes Award
6. National Institute of Ceramic Engineers (NICE) Scholarship Winner
7. Alpha Lambda Delta National Book Award
8. Alpha Lambda Delta Senior Student
9. Alfred University Southern Tier Scholar
10. Phi Kappa Phi Honor Society
11. Omicron Delta Kappa Honor Society
12. Keramos Honor Society
13. Tau Beta Pi Honor Society
14. ASM International Book Award
15. NYS Transportation Engineers Scholarship
16. New York State Merit Scholar
17. Alfred University Science & Engineering Day Scholarship

18. The National Dean's List
19. Bausch & Lomb Science Award

## **ENTREPRENEURSHIP**

During my undergraduate years I had my own software company. The following programs were released as shareware and featured in several computer magazines in the U.S., U.K., and Japan:

1. **Alpha Blaze:** Educational word game for middle and high school students (2001).
2. **Cyberopoly:** You play a ruthless computing industry executive who is trying to take over as many companies as possible. Named best shareware of the year by *MacAddict* magazine (2000).
3. **Digital Wipeout:** Score as many points as possible by "wiping out" numbers on the board in this educational math game for all ages (1999).
4. **Trilite:** Set three adjacent squares to your color in this strategy game (1999).
5. **PowerCalc:** Advanced scientific calculator with built-in unit conversions and more (1998).
6. **PowerCalc Lite:** Streamlined calculator application (1998).