

April 5 – 7, 2022 | Washington, DC

ceramics.org/NDOG

2022

NATIONAL DAY OF GLASS CONFERENCE

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the power
and
potential
to forge
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of progress.**

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2022 NATIONAL DAY OF GLASS CONFERENCE

Dear Friends in Glass,

It is our honor and joy to welcome you to the National Day of Glass Conference and celebration!

This week's auspicious event traces back to the vision of Drs. David Pye and Alicia Durán to propose a Year of Glass to the United Nations. Since 1959 the U.N. has declared International Years to highlight industries, concepts, or ideals that promote its objectives.

This year marks the first time the U.N. has recognized a material with the International Year designation. No other material so uniquely brings together art, beauty, and culture with function and engineering.

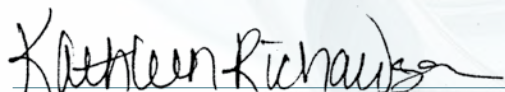
Dr. Durán, as president of the International Commission on Glass, led the effort to collect more than 1,800 support declarations for the proposal from signatories representing more than 81 countries and all continents. The United Nations approved the proposal in May 2021, and almost immediately planning began for hundreds of events around world—including this National Day of Glass Conference.

Glass has long captured the human imagination. Our history with glass goes back to prehistoric times when obsidian was crafted into cutting tools and arrowheads. Ancient civilizations discovered how to melt and form glass, creating ceremonial objects, perfume bottles, and jewelry for royalty. In medieval times, colored glass was installed in stained glass windows in cathedrals and churches.

Today, glass provides the optical fiber backbone of the internet and phone communications, energy efficient windows, lenses for cameras, electronic device displays, wound healing treatments, and much more. The Information Age could not exist were there not a concurrent Glass Age.

Over the next few days we will hear talks and panel discussions from leaders in industry, government, academia, and art who will celebrate and showcase the technical, economic, cultural, and artistic impact of glass on the nation and the world. With a nod to the past, they will point us toward a future for glass that is innovative, creative, inspiring, and even surprising.

Thank you for joining us. Make connections and enjoy the camaraderie of colleagues, old friends and new, and others who appreciate and are intrigued by the wide-ranging material we love – glass.



Kathleen A. Richardson

National Day of Glass Convening Chair



Mario Affatigato

National Day of Glass Technical Chair

2022 NATIONAL DAY

WELCOME . . .

to the **National Day of Glass Conference**, one of many glass-related events being held as part of the United Nations declared International Year of Glass 2022. Conferences and exhibitions are being held this year across the globe as the world of glass is celebrated to pay homage to technology of the past and to promote and foster the future of glass and glass manufacturing.

The American Ceramic Society is honored to host this conference featuring technical programming and talks from some of the largest companies and biggest minds in the North American glass industry, art community, government agencies, and educational systems who rely on glass.

ORGANIZING COMMITTEE



Manoj Choudhary

Chair, North American Steering Committee for the UN International Year of Glass
MKC Innovations, LLC

Dr. Manoj Choudhary is an Adjunct Professor in the Dept. of Materials Science and Engineering at the Ohio State University. He obtained his Sc.D. in Materials Science and Engineering from Massachusetts Institute of Technology. After his doctoral and post-doctoral research at MIT, he joined Owens Corning's Science and Technology Center in Granville, Ohio. He was a member of OC's Senior Technical Staff and retired from OC in 2018. At OC, he was the foremost expert in the application of science and engineering fundamentals and advanced CFD simulation for process and product development and innovation. He also taught at various forms, internal and external, mentored and advised colleagues and students, and gave numerous invited and key note lectures. He has authored over 60 publications, including several book chapters, numerous Owens Corning technical reports and has 10 patents.

Dr. Choudhary's research, engineering, and teaching interests have included MHD Processing of Materials, Transport Phenomena in Materials Processing, Glass Melting, Glass and Mineral Fiber Forming, Polymeric Foam Extrusion, Process and Product Modeling, and Thermal and Mechanical Properties of Fiberglass Insulation.

Dr. Choudhary is Fellows of both the British Society of Glass Technology, and the American Ceramic Society. He has presided over several organizations including the International Commission on Glass (ICG), Center for Glass Research at Alfred University, the Glass and Optical Materials Division of the American Ceramic Society, and the Glass Manufacturing Industry Council, of which he was also a founder. He has received numerous awards and honors for academic and professional achievements including, most recently, the ICG President's Award, Dr. Atma Ram Memorial Lecture (Central Glass and Ceramic Research Institute, India), and the Samuel R. Scholes Lecture Award (Alfred University).

He is chairing the US-Canada Steering Committee for the celebrations associated with "International Year of Glass-2022" declared by the United Nations General Assembly.



L. David Pye

International Year of Glass Architect
Alfred University, Empire State Glass

L. David Pye is Dean and Professor of Glass Science, Emeritus, The New York State College of Ceramics at Alfred University. An honored teacher, scholar, and researcher, he has served as president of The American Ceramic Society (ACerS) and The International Commission on Glass (ICG). He is a Distinguished Life

Member of ACerS, Honorary Member of The German Society of Glass Technology, and Honorary Fellow of The British Society of Glass Technology. His professional achievement awards include The ICG President's Award, The New York State University Chancellor's Award for Scholarship and Creativity, and The Phoenix Award for Glass Person of Year. He played major leadership roles in establishing at Alfred, the only Ph.D Glass Science program in United States and the National Science Foundation Industry-University Center for Glass Research. He also led efforts in founding several continuing conference series including Advances in the Fusion and Processing of Glass and The University Series on Glass Science. In 2003, he presented the Plenary Address at the 10th International Conference on the Physics of Non-crystalline Solids; in 2013 the Keynote Address at the 23rd International Congress on Glass; and in 2014 the Keynote Address at the 12th European Society of Glass Conference. He was the Founding Editor of *International Journal of Applied Glass Science* and in 2018 a special Symposium was convened in his honor by the ACerS Glass and Optical Materials Division. In 2019, the Division inaugurated The L. David Pye Lifetime Achievement Award, and over the last four years he has played a lead role in launching, guiding, and promoting the declaration of 2022 as The United Nations International Year of Glass. As Chief Executive Officer of Empire State Glassworks LLC, he is also an aspiring stained glass artist.



Kathleen A. Richardson

National Day of Glass Convening Chair
University of Central Florida

Dr. Kathleen Richardson is Pegasus Professor of Optics and Materials Science and Engineering and Florida Photonics Center of Excellence (FPCE) Professor at CREOL/College of Optics and Photonics at the University of Central FL, where she runs the Glass Processing and Characterization Laboratory (GPCL). Prof. Richardson and her research team carry out design, synthesis, and characterization of novel glass and glass-ceramic materials for optical applications, examining the role of structure-property relationships on resulting optical function and performance in bulk, planar, and fiber optical materials, particularly those operating in the infrared. Dr. Richardson has authored more than 250 peer-reviewed publications, and numerous proceedings and book chapters, has a broad portfolio of IP related to these advances. She was part of the global team who led the successful petition to the United Nations that resulted in the declaration of 2022 as the International Year of Glass. In 2021, she was recognized with UCF's Excellence in Research Award. She currently holds the rank of Fellow in The American Ceramic Society, the Society of Glass Technology, SPIE and Optica/Optical Society of America, as well as an honorary fellowship from the European Ceramic Society. Her extensive service to the glass and optical materials community in a wide array of leadership and consulting roles is noteworthy. Since 2006, she has served as a member of the Board of Trustees at Alfred University.

OF GLASS CONFERENCE

**Mario Affatigato**

National Day of Glass Technical Chair
Coe College

Prof. Mario Affatigato obtained his undergraduate degree from Coe College in 1989, followed by his Ph.D. from Vanderbilt University in 1995. His research primarily deals with oxide glasses, especially vanadates, borates, and samples with heavy metals. He has worked with over 100 undergraduates in projects that include laser-induced modification, bactericidal glass composites, and exotic manufacturing methods like aerolevitation. Prof. Affatigato is a past recipient of the APS Prize for Research at an Undergraduate Institution, a PECASE award from the National Science Foundation, and other research grants from industry, NSF, and the Research Corporation in support of his work. He is a Fellow of The American Ceramic Society, the UK Society of Glass Technology, and a Research Corporation Cottrell Scholar. Currently, he holds the Fran Allison and Francis Halpin Professorship at Coe College, is the Editor in Chief of the *International Journal of Applied Glass Science*, and just finished his term on the Board of Directors of ACerS.

**Marcus Fish**

Ceramic and Glass Industry Foundation (CGIF)

Marcus Fish is the Development Director for the Ceramic and Glass Industry Foundation, overseeing all aspects of fundraising and outreach programs for the Foundation and ACerS. Marcus is a Certified Fundraising Executive (CFRE) and has experience in higher education, financial planning, and technology consulting. Marcus lives in Lewis Center, Ohio with his wife Hollie and their three children.

**Bob Lipetz**

Executive Director, Glass Manufacturing Industry Council (GMIC)

Bob Lipetz, MBA, is an association whisperer with a track record of growing professional associations. He has been the executive director of the Glass Manufacturing Industry Council for the past 11 years. During that time, Mr. Lipetz has initiated numerous service lines benefiting the glass manufacturing industry. In 2012, he successfully brought the annual Conference on Glass Problems under the organization of the Glass Manufacturing Industry Council. As conference director, Mr. Lipetz has led the substantial growth and value of the conference. Also beginning in 2012, he organized and administered the Usable Glass Strength Coalition, a coalition of industry to support fundamental research at major universities. Mr. Lipetz is a member of the governing council of the International Commission on Glass. He has numerous articles and editorials published in trade and scientific journals. As the inaugural executive director of the Society of Chest Pain Centers, he grew the nonprofit from a start up to its current position as one of the most influential organizations in improving heart attack care. A graduate of the Ohio State University Fisher School of Business, Mr. Lipetz resides in Columbus, Ohio.

FINANCE COMMITTEE

**Arun Varshneya**

Saxon Glass Technologies, Inc.

Arun Varshneya, affectionately called "the Glass Guru," is most known for his seminal work in the chemical strengthening of glass. His entrepreneurship business, Saxon Glass Technologies, Inc., based in Alfred, NY, has supplied nearly 0.4 billion strengthened borosilicate glass cartridges over the past 25 years to deliver epinephrine from an EpiPen® autoinjector to counteract anaphylaxis shock in the event of severe allergies. His pioneering work on chemically strengthened display glass covers forms the basis of glass usage in all smartphones.

Varshneya received his B.S. degree in glass at Sheffield University and an M.S. and Ph.D. from Case Western Reserve University. Following an illustrious career as an industrial scientist at Ford and GE Lighting spanning more than a decade, he joined Alfred University as a faculty in 1982. At Alfred, he taught nearly all the courses in glass science and technology, as well as the basic of materials engineering business. He is the author/co-author of about 165 publications on "cover-to-cover" topics in glass and 12 patents. His textbook, "Fundamentals of Inorganic Glasses," now in its 3rd edition, is one of the most admired by glass students and professionals globally. He is the invited author of the 13-page entry "Industrial Glass" in the Encyclopedia Britannica, a Distinguished Life Member of The American Ceramic Society, an Honorary Fellow of the Society of Glass Technology UK, recipient of International Commission on Glass President's Award, and recipient of the lifetime achievement "Gold Medal" award of the Case Alumni Association.

2022 NATIONAL DAY

SPEAKER SCHEDULE

WEDNESDAY, APRIL 6, 2022

8 A.M. – NOON OPENING SESSION | DOLLEY MADISON BALLROOM

OPENING REMARKS

Kathleen Richardson, National Day of Glass Chair

Manoj Choudhary, North American Steering Committee Chair

Reinhard Conradt, International Commission Convening on Glass

8:15 A.M.

The Age of Glass - Affirmation and Celebration

Stephen Eskilson, Professor, Eastern Illinois University

8:40 A.M.

Glass – Vital to our Future

Wendell Weeks, Chairman and Chief Executive Officer of Corning Incorporated

9:10 A.M.

(Inspire + Transform) x Sustain = Glass

Ludovic Valette, Vice President, Global Technology and Engineering, O-I Glass

9:30 A.M.

Shaking the Etch-a-Sketch of America's Innovation Ecosystem

Kelvin Droegeheimer, Regent's Professor of Meteorology, Weathernews Chair Emeritus, and Teigen Presidential Professor, University of Oklahoma

9:50 A.M.

Innovation and Invention: The Importance of Investments in Fundamental Science & Engineering

Sethuraman Panchanathan, Director, National Science Foundation

10:10 A.M.

BREAK Sponsored by



10:30 A.M.

How Specialty Glass is Energizing Our Future: Enabling Health, Energy, and Sustainability

Matthias Muller, Executive VP R&D and New Ventures, SCHOTT Glass AG

10:50 A.M.

Pilchuck 50 years of International Glass Art Education

Christopher Taylor, Executive Director, Pilchuck Glass School

11:10 A.M.

From University Research to Clinical Use- A Biomedical Glass Story

Richard Brow, Deputy Provost for Academic Excellence and Curators' Distinguished Professor of Ceramic Engineering, Missouri S&T and **Steven Jung**, Chief Technology Officer, Mo-Sci Corporation

11:40 A.M.

Discovering the Glasses of the Future Using Artificial Intelligence

Mathieu Bauchy, Associate Professor, UCLA

1 – 2 P.M. SESSION II

Panel: **Educating and Training the Next Glass Generation Workforce**

Moderator: **Christine Heckle**, Corning Incorporated

Session Chair: **Harrie Stevens**, Corning Incorporated and Alfred University, ret.

Panelists:

- **Adelle Schade**, Dean of Pre-college and Summer Programming, Albright College
- **Jacquelyn Fetrow**, President, Albright College
- **Himanshu Jain**, T.L. Diamond Distinguished Chair Professor of Engineering and Applied Science, and the Director of Institute for Functional Materials and Devices, Lehigh University
- **Judith Schaechter**, Adjunct Professor at Tyler School of Art, Temple University, Philadelphia, PA and Adjunct Professor of Craft at University of the Arts, Philadelphia, PA
- **Anuradha Agarwal**, Leader, AIM Academy LEAP, MIT
- **Scott Cooper**, Glass and Materials Science Group Leader–R&D at Owens-Illinois Corp.

2 – 5 P.M. SESSION III

Session Chair: **L. David Pye**, Emeritus Professor, Alfred University

2 P.M.

The United Nations International Year of Glass- 2022: A Dream Come True

Alicia Durán, Chair, International Year of Glass

OF GLASS CONFERENCE

SPEAKER SCHEDULE

WEDNESDAY, APRIL 6, 2022

2:20 – 5 P.M. SESSION III (Continued)

2:20 P.M.

American Glass Manufacturing - A Love Letter

Bob Lipetz, Executive Director, Glass Manufacturing Industry Council

2:40 P.M.

Glass: An Indispensable Material for a Sustainable World
Manoj Choudhary, North American Steering Committee Chair

3 P.M.

BREAK Sponsored by VERESCE

Session Chair: **Jeffrey Kohli**, Director of Glass Research, Corning Incorporated

3:20 P.M.

Foundational Role of Non-oxide Glass to Enable Electro-photographic Printing and Creation of Xerox Corporation
Santokh Badesha, Corporate Fellow and Manager of Open Innovation, Xerox Corporation

3:40 P.M.

Igniting a Fusion Energy Future with Optics and Photonics
Tammy Ma, Deputy Director, Lawrence Livermore National Lab

4 P.M.

Bending Light with Glass: Images from the Cosmos to the Microbe
Steve Feller, B.D. Silliman Professor of Physics, Coe College

4:20 P.M.

The Second Decade of the Materials Genome Initiative
James Warren, Director of the Materials Genome Program, NIST

4:40 P.M.

The Art of Glass: Three Millennia of Creativity and Expression
Karol Wight, Executive Director, The Corning Museum of Glass

5 – 6 P.M. SESSION IV

Panel: **Art and Glass in Society**

Session Chair and Moderator: **Kathy Jordan**, President, American Glass Guild

Panelists:

- **Robert Schaut**, Scientific Director for Pharmaceutical Packaging, Corning Inc.
- **Ashutosh Goel**, Assistant Professor of Materials Science & Engineering, Rutgers University
- **Natalie Tyler**, Glass Artist
- **Megan McElfresh**, Executive Director, Stained Glass Association of America
- **Urmilla Johku-Sowell**, National Glass Association

7:00 – 10:00 P.M. CELEBRATORY BANQUET:
GLASS ART IN OUR WORLD

Featured Speakers:

Sharing the Secrets: From Venice to Stanwood
Dale and Leslie Chihuly (Recorded presentation)



Glass: Two Collaborations between Science and Art



-*The Cosmos in the Basilica*
-*Beyond Painting*
Narcissus Quagliata

2022 NATIONAL DAY

SPEAKER SCHEDULE

THURSDAY, APRIL 7, 2022

8 – 9:50 A.M. SESSION V

Session Chair: **Gang Chen**, Ohio University and ACerS Glass & Optical Materials Division Chair

8:15 A.M.

Research for the Glass Age

John Mauro, Professor and Associate Head for Graduate Education in the Department of Materials Science and Engineering, The Pennsylvania State University (Recorded presentation)

8:30 A.M.

Breakthrough Technologies

Stefanie Tompkins, Director, DARPA

8:50 A.M.

Glass the Ultimate Sequester and Self-Sustaining Product

Vahid Majidi, Director, Savannah River National Lab

9:10 A.M.

Glass Window: Past, Present, and Future

Naoki Sugimoto, Executive Officer and General Manager, Materials Integration Laboratories, AGC Inc.

9:30 A.M.

The Story of IPS e.max® Glass-ceramic in the Dental Industry and its Potential for the Future

Thomas Hirt, CTO, Ivoclar Vivodent

9:50 A.M.

BREAK

10:05 A.M. – 12:25 P.M. SESSION VI

Session Chair: **Gabrielle Gaustad**, Dean, Inamori School of Engineering, Alfred University

10:05 A.M.

The Role of Fiber Glass for Contribution to Strategic Development Goals

Hiroaki Nomura, President, Electric Glass Fiber America LLC, a US-based subsidiary of Nippon Electric Glass (NEG)

10:25 A.M.

A Rose Is A Rose Is A Rose: What Colorblindness Reveals about Perception

Donald McPherson, Chief Science Officer, EnChroma

10:45 A.M.

Upcycling Waste Glass into High Value Planet-saving Materials

Phillip Galland, CEO, GlassWRX

11:05 A.M.

Glass and Lasers – A Bright Future

John Ballato, Professor of Materials Science & Engineering, Clemson University

11:25 A.M.

Infrared Glass – Transforming Imaging

Sam Rubin, CEO, LightPath Technologies

11:45 A.M.

Alfred University and Glass Science and Art

Mark Zupan, President, Alfred University

12:05 P.M.

On the Shoulders of Giants

Arun Varshneya, President and CEO, Saxon Glass Technologies

1:30 P.M. – 2:30 P.M. SESSION VII

Session Chair: **Doris Moncke**, Alfred University

Panel: *Seeing the Future through Glass*

Moderator: **John Ballato**, Clemson University

Panelists:

- **Jeffrey Kohli**, Director of Glass Research, Corning Incorporated
- **Du T. Nguyen**, Lawrence Livermore National Lab
- **Collin Wilkinson**, Director of Research and Development, GlassWRX
- **Alastair Cormack**, Alfred University

OF GLASS CONFERENCE

SESSION CHAIRS



Kathleen Richardson
University of Central Florida
Opening Session Chair



Gabrielle Gaustad
Inamori School of Engineering, Alfred University
Session VI Chair



Harrie Stevens
Corning Incorporated and Alfred University, ret.
Session II Chair



Doris Moncke
Inamori School of Engineering, Alfred University
Session VII Chair



L. David Pye
Emeritus Professor, Alfred University
Session III Chair



Jeffrey Kohli
Corning Incorporated
Session III Chair



Kathy Jordan
American Glass Guild
Session IV Chair



Gang Chen
Ohio University
Session V Chair

PANEL MODERATORS



Christine Heckle
Corning Incorporated
Educating and Training the Next Glass Generation Workforce



Kathy Jordan
American Glass Guild
Art and Glass in Society



John Ballato
Clemson University
Seeing the Future through Glass

2022 NATIONAL DAY

PANELS

WEDNESDAY, 1 – 2 PM SESSION II

PANEL: EDUCATING AND TRAINING THE NEXT GLASS GENERATION WORKFORCE

Session Chair:



Harrie Stevens
Corning Incorporated and Alfred University, ret.

Moderator:



Christine Heckle
Corning Incorporated

Panelists:



Adelle Schade
Dean of Pre-college and Summer Programming, Albright College



Himanshu Jain
T.L. Diamond Distinguished Chair Professor of Engineering and Applied Science, and Director of Institute for Functional Materials and Devices, Lehigh University



Jacquelyn Fetrow
President, Albright College



Anuradha Agarwal
Leader, AIM Academy LEAP, MIT

Judith Schaechter

Adjunct Professor at Tyler School of Art, Temple University in Philadelphia, PA and Adjunct Professor of Craft at University of the Arts, Philadelphia, PA

OF GLASS CONFERENCE

PANELS

WEDNESDAY, 5 – 6 PM SESSION IV

PANEL: ART AND GLASS IN SOCIETY

Session Chair and Moderator:



Kathy Jordan
President, American Glass Guild

Panelists:



Robert Schaut
Director for Pharmaceutical Packaging,
Corning Incorporated



Ashutosh Goel
Assistant Professor of
Materials Science &
Engineering, Rutgers
University



Natalie Tyler
Glass artist



Megan McElfresh
Executive Director, Stained Glass
Association of America



Urmilla Jokhu-Sowell
National Glass Association

2022 NATIONAL DAY OF GLASS CONFERENCE

PANELS

THURSDAY, 1:30 – 2:30 PM SESSION VII PANEL: SEEING THE FUTURE THROUGH GLASS

Session Chair:



Doris Moncke

Associate Professor of Glass Science/
Engineering at the Inamori School of
Engineering, NYS College of
Ceramics at Alfred University

Moderator:



John Ballato

Professor of Materials Science &
Engineering, Clemson University

Panelists:



Jeffrey Kohli

Director of Glass Research, Corning
Incorporated



Collin Wilkinson

Director of Research and Develop-
ment, GlassWRX



Du T. Nguyen

Lawrence Livermore National Lab



Alastair Cormack

Alfred University

SCHOTT
glass made of ideas

RESPONSIBLY

 GLASSLOVERS

United by a passion for glass.

We know we have to do our part to stop climate change –
and pledge to be climate neutral by 2030.

Carlo, Anja, Leon – Pioneers at SCHOTT

glasslovers.schott.com

SPEAKER



Santokh Badesha

Corporate Fellow and manager of Open Innovation,
Xerox Corporation

Abstract: The presentation will start with an historical review of how chalcogenide-based metallic glass, originally explored by Haloid Inc and Battelle Memorial Institute, led to its eventual use in electrophotography, resulting in a multi-billion-dollar business for Xerox and its supplier base. Innovative efforts will be described in the creation of nanoparticulate materials, specifically semiconductive chalcogenides leading to Se/Te/As chemical alloying process, their reclamation from scrap alloys, tailoring of their electrical properties in chalcogens-based photoreceptors, and alloy fractionation control. The presentation will close with a description of the transformation of photoreceptor technology from metallic glasses to multilayer organic configuration.

Biography: Dr. Badesha is a Corporate Fellow and manager of Open Innovation at Xerox, responsible for leading interorganizational efforts with both internal and external value chain partners, building academic and industrial partnerships, and providing critical technical support for product programs. In addition, he is a technical liaison to a number of academic institutions for talent development and acquisition, and collaborative research. He is also an adjunct innovation professor at Purdue University.

Dr. Badesha received his Ph.D. in organic chemistry from the Punjab Agricultural University and then received a second Ph.D. from the University of East Anglia, U.K. He holds 258 U.S patents that have also been filed in multiple foreign countries. This makes him one of the most prolific inventors ever in the history of Xerox Corporation. He has an additional 50+ U.S. patent applications on file with the USPTO and are at different stages of patenting process. In addition, he has over 55 peer reviewed key scientific publications and presentations in international scientific journals and professional society's conferences.

Dr. Badesha was elected to the National Academy of Engineering in 2021. In 2021, he was also elected to the National Academy of Inventors, and named Honorary Member of the Society for Imaging Science and Technology for "long and outstanding contributions to the science and the development of digital printing systems." Xerox awarded Badesha the President's Award, four Excellence in Science & Technology Awards, and named him to the prestigious Xerox CEO Club and Innovation Group Hall of Fame. He also received the Distinguished Inventor of the Year Award from the Rochester Intellectual Property Law Association.

FOUNDATIONAL ROLE OF NON-OXIDE GLASS TO ENABLE ELECTROPHOTO-
GRAPHIC PRINTING AND CREATION OF XEROX CORPORATION

GLASS AND LASERS– A BRIGHT FUTURE

**John Ballato**

Professor of materials science and engineering, Clemson University

Abstract: Hair-thin strands of glass, intrinsically transparent and strong, connect today's world in ways unimaginable even 20 years ago. Over their 50 years history, glass optical fibers have advanced from passive low-loss conduits for light, to active light-amplifying hosts, to a myriad of nano-to-macro-structuring of core-clad combinations. This talk will discuss this history as a looking-glass into the future of optical fibers and its symbiosis with light to address the question: what can the next 50 years bring?

Biography: John Ballato received a B.S. degree in ceramic science and engineering and Ph.D. degree in ceramic and materials engineering from Rutgers, The State University of New Jersey, in 1993 and 1997, respectively. He is currently a professor of materials science and engineering at Clemson University, SC, where he is the inaugural holder of the Sirrine Endowed Chair in Optical Fiber. He has published more than 450 technical papers and holds 34 U.S. and foreign patents. He is a Fellow of the American Association for the Advancement of Science, Institute of Electrical and Electronics Engineers, American Physical Society, Optica (formerly Optical Society of America), International Society of Optical Engineering, and The American Ceramic Society. He is also an elected member of the US National Academy of Inventors and the World Academy of Ceramics.

SPEAKER



Mathieu Bauchy

Associate professor, University of California, Los Angeles

Abstract: Although glass has already enabled several world-changing discoveries (telescope, microscope, optical fibers, etc.), it must be admitted that we have only scratched the surface of this unique material. Indeed, out of the 1052 glasses that are theoretically possible, only an infinitesimal fraction (about 106) has been synthesized since the dawn of time. As such, glass features a vast, largely untapped potential to enable future mankind's greatest inventions and one can anticipate many surprises in the coming years. However, based on the human brain's inability to cope with the astronomical number of possible glasses, it is likely that the glasses of the future will be discovered by an artificial intelligence (AI). Here, I will discuss the exciting opportunities offered by big data, AI, and machine learning to assist material scientists and drastically accelerate the pace at which we discover new glasses with surprising properties and functionalities.

Biography: Mathieu Bauchy is an associate professor in the Civil & Environmental Engineering Department at the University of California, Los Angeles, where he runs the Physics of Amorphous and Inorganic Solids Laboratory (PARISlab). He received his undergraduate education in Physics at Ecole Normale Supérieure (France) before pursuing a Ph.D. in Condensed Matter at Université Pierre et Marie Curie (France). He then joined the Massachusetts Institute of Technology as a postdoctoral associate. Bauchy's research focuses on decoding the physics governing the behavior of materials by means of simulations and artificial intelligence. He received the Norbert J. Kreidl Award by The American Ceramics Society, the MDPI's Materials Young Investigator, and the Elsevier's Rising Star in Computational Materials Science Award. He has delivered more than 150 presentations and published more than 180 papers.

DISCOVERING THE GLASSES OF THE FUTURE USING ARTIFICIAL INTELLIGENCE

FROM UNIVERSITY RESEARCH TO CLINICAL USE- A BIOMEDICAL GLASS STORY



Richard Brow

Deputy Provost for Academic Excellence and Curators' Distinguished Professor of Ceramic Engineering, Missouri Science and Technology

Abstract: Two remarkable features of oxide glasses are the ability to both tailor their compositions for specific applications and to form them into products that are optimized for those applications. In this talk, we will review how a faculty member and his students at Missouri S&T used those two features to develop a unique glass product to treat inoperable liver cancer and we will describe how Mo-Sci, Inc. (Rolla, MO), the company that was started to manufacture the first materials, became a worldwide leader in bioactive glass products, helping tens of thousands of people along the way. We will review the materials science and engineering behind that first product, micron-sized glass spheres doped with yttrium that could deliver therapeutic radioactive doses directly to a tumor, and how the subsequent development of new compositions led to the discovery of a new family of soluble borate bioactive glasses that can regenerate tissues and help heal wounds. Along the way, the researchers involved in these studies gained a better understanding of how glasses react in aqueous environments, including in the body, and this understanding helped lead to the development of other materials, including glasses that are so chemically stable that they are being used as hosts for radioactive wastes. The development of these glasses like these into useful products was made possible because of the synergistic partnership between federal funding agencies, who sponsored much of the initial work, Missouri S&T, where faculty and students made the initial discoveries, and Mo-Sci, where those discoveries led to the products now used by patients around the world.

Biography: Richard K. Brow is the Deputy Provost for Academic Excellence and Curators' Distinguished Professor of Ceramic Engineering at Missouri S&T, where he teaches courses on glass science and technology and he studies the relationships between glass composition, structure and properties. He and his colleagues have written over 200 peer-reviewed archival publications and he holds 19 patents on glasses for a variety of engineering applications. Brow has served as president of The American Ceramic Society and presided over the 25th International Congress on Glass in Boston in 2019.

SPEAKER



Manoj K. Choudhary

The Ohio State University, Columbus, Ohio, USA
Chair, North American Steering Committee for the UN International Year of Glass

Abstract: On May 18, 2021 the United Nations General Assembly formally approved a resolution declaring the year 2022 “The International Year of Glass” (IYOG). This is a seminal and celebratory moment for the global glass community. This is the first time that United Nations has accorded such a recognition to a specific material and represents an acknowledgment of the vital role glass has played and will continue to play in the advancement of human society. The proposal to UN for IYOG focused on the vital role of glass in achieving many of the UN Sustainable Development Goals (UNSDGs). It also emphasized the commitment of the global glass community to these goals, which include good health and wellbeing, quality education, gender equality, clean water and sanitation, affordable and clean energy, industry, innovation, and infrastructure, sustainable cities and communities, and climate action. In this talk we will discuss the critically important role of glass as an enabler of sustainable growth. In particular, we will highlight the role of glass in energy savings and renewable energy generation, and reduction in greenhouse gas emissions.

Biography: Dr. Manoj Choudhary is an Adjunct Professor in the Dept. of Materials Science and Engineering at the Ohio State University. He obtained his Sc.D. in Materials Science and Engineering from Massachusetts Institute of Technology. After his doctoral and post-doctoral research at MIT, he joined Owens Corning’s Science and Technology Center in Granville, Ohio. He was a member of OC’s Senior Technical Staff and retired from OC in 2018. At OC, he was the foremost expert in the application of science and engineering fundamentals and advanced CFD simulation for process and product development and innovation. He also taught at various forms, internal and external, mentored and advised colleagues and students, and gave numerous invited and key note lectures. He has authored over 60 publications, including several book chapters, numerous Owens Corning technical reports and has 10 patents.

Dr. Choudhary’s research, engineering, and teaching interests have included MHD Processing of Materials, Transport Phenomena in Materials Processing, Glass Melting, Glass and Mineral Fiber Forming, Polymeric Foam Extrusion, Process and Product Modeling, and Thermal and Mechanical Properties of Fiberglass Insulation.

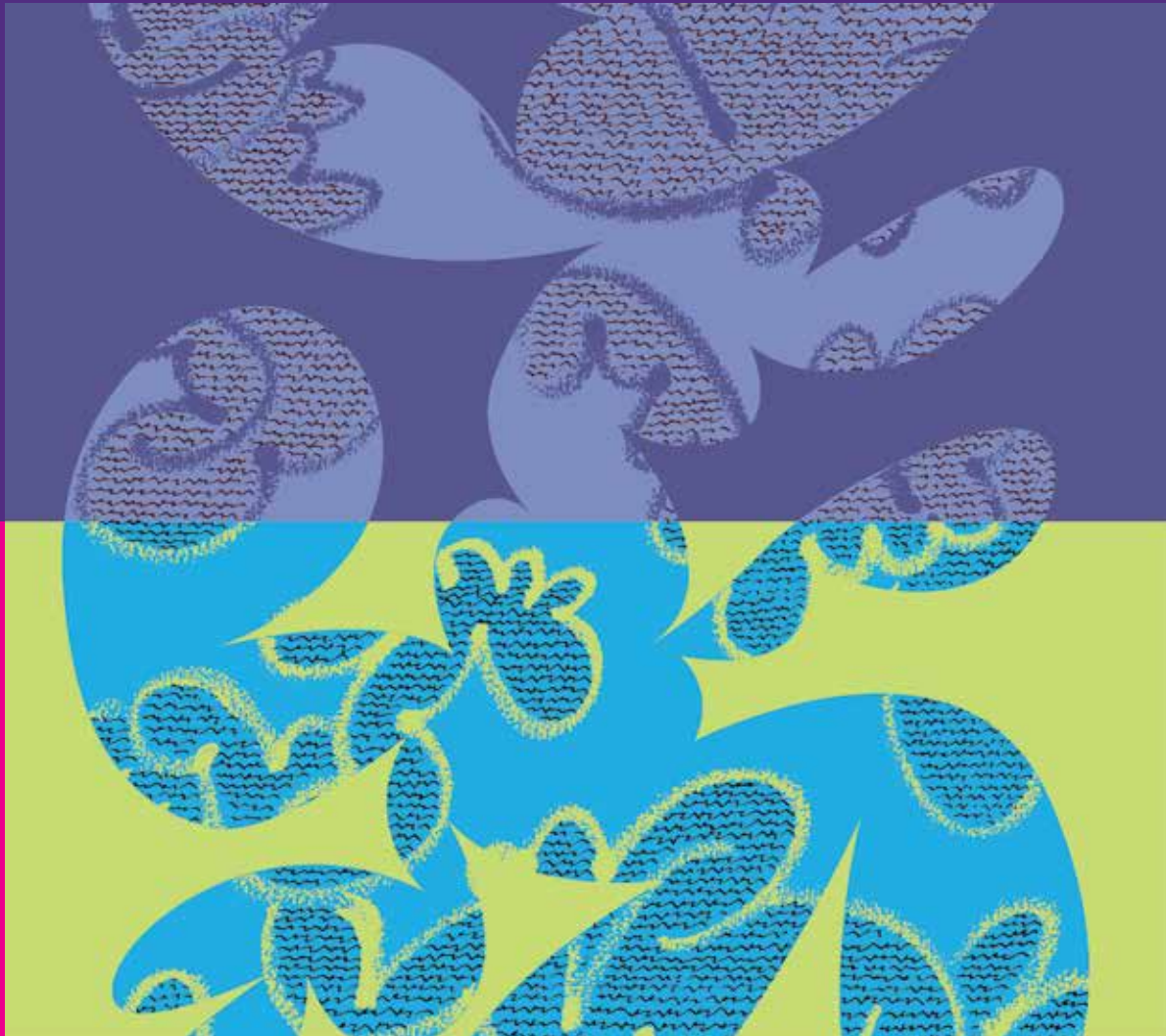
Dr. Choudhary is Fellows of both the British Society of Glass Technology, and the American Ceramic Society. He has presided over several organizations including the International Commission on Glass (ICG), Center for Glass Research at Alfred University, the Glass and Optical Materials Division of the American Ceramic Society, and the Glass Manufacturing Industry Council, of which he was also a founder. He has received numerous awards and honors for academic and professional achievements including, most recently, the ICG President’s Award, Dr. Atma Ram Memorial Lecture (Central Glass and Ceramic Research Institute, India), and the Samuel R. Scholes Lecture Award (Alfred University).

He is chairing the US-Canada Steering Committee for the celebrations associated with “International Year of Glass-2022” declared by the United Nations General Assembly.

GLASS: AN INDISPENSABLE MATERIAL FOR A SUSTAINABLE WORLD

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BY GUSTAVO OVIEDO

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SPEAKER



Sheldon Davis

Vice president of development and research, Guardian Glass

Abstract: Glass is an important and indispensable material in our built environment. Glass helps to create comfortable and healthy spaces for everyday life. By providing daylight, windows play an important role our health and wellbeing. In offices, productivity can increase when windows are present. As an aesthetic element, glass is a key component to the beauty that is our skylines, venues, and homes. It is difficult to imagine a building without glass windows.

Modern glass, as transparent barrier, is wonderful. Based on technology that shapes sunlight, glass reflects light to create color and control reflections. All the while, glass helps to keep buildings warm in the winter and cool in the summer.

As a transparent and reflective material, we rarely see it. We look through it; its transparency showing the other side. On glass buildings, we perceive images reflecting off our buildings. We see the world around not the glass itself. Its transparency preventing the wonderful technology from being seen; potentially keeping us from perceiving the benefits.

Glass and the benefits that it provides are effectively invisible.

Biography: Dr. Sheldon Davis is vice president of research and development for Guardian Glass, a role in which he is responsible for the research and development of process and product technology.

He joined Guardian in 2013 and has spent his entire, 20+ year career in research and development for products and technology in the materials and chemical industry. Prior to Guardian, Davis worked for Praxair and then Cabot Corporation, where he worked his way up to director of R&D. He has a Ph.D. in chemical engineering from the University of Arizona and a B.S. in chemical engineering from North Carolina State University. A native of Hawaii, Davis is married and has three children.

INDISPENSABLE BUT INVISIBLE: THE BENEFITS OF GLASS

SHAKING THE ETCH-A-SKETCH OF AMERICA'S INNOVATION ECOSYSTEM

**Kelvin Droegemeier**

Regents' Professor of Meteorology, Weathernews Chair Emeritus, and Teigen Presidential Professor at the University of Oklahoma

Abstract: The shapes, colors, and possible uses of glass have been a constant source of inspiration for creativity and innovation throughout history—and still are today. Glass inspires innovation because of its ability to transform something ordinary into something extraordinary—you may remember how a simple glass bottle helped create unique memories during a special occasion? Over time, the innovative inspiration and transformational power of glass has increased not only its applications and uses, but also the technology and engineering used to produce it.

Biography: Kelvin Droegemeier is Regents' Professor of Meteorology, Weathernews Chair Emeritus, and Teigen Presidential Professor at the University of Oklahoma, where he served for nearly a decade as vice president for research. He has been at OU for 36 years and co-founded and directed one of NSF's first Science and Technology Centers. He served two 6-year terms on the National Science Board, the last four years as vice chairman, nominated first by President George W. Bush and then by Barack Obama and confirmed both times by the U.S. Senate. He also served for two years as Oklahoma Cabinet Secretary of Science and Technology. Most recently, Dr. Droegemeier served for two years as Director of The White House Office of Science and Technology Policy and Science Advisor to the President. For two and a half months during this time, he also served as Acting Director of the National Science Foundation. His research involves numerical simulation and prediction of high-impact local weather, and the assimilation of data into storm-resolving models. He is a Fellow of the American Meteorological Society and the American Association for the Advancement of Science, and has published more than 80 referred journal articles and over 200 conference publications.

SPEAKER



Alicia Durán

Professor, Instituto de Cerámica y Vidrio (CSIC)

Abstract: On May 18, 2021 the United Nations General Assembly approved the resolution to declare the year 2022 “The International Year of Glass”. This is a seminal and celebratory moment for the global glass community. It is noteworthy that this is the first time that UN has accorded such a recognition to a specific material and represents an acknowledgment of the vital role glass has played and will continue to play in the advancement of human society. The UN resolution is the culmination of the vigorous leadership of the International Glass Commission (ICG) and enormous efforts of many individuals and organizations from all over the world. The vision for the International Year of Glass (IYoG) emerged from a series of activities centered on the theme of the “Glass Age” that took place during 2016-2018 and presentations made at various international glass forums. The talk will provide background information on the UN resolution and discuss the scientific, technological, and economic significance of glass, a vitally important material for meeting the challenges of climate change and developing equitable and sustainable society. IYOG2022 is a common dream come true, celebrated through thousands of events in industry, academia and art all over the world. The talk will also highlight the role glass has played in arts and advancing human civilization throughout the history and outline various events planned around the world to celebrate the year 2022 as the Year of Glass.

Biography: Alicia Durán obtained a degree in physics from the National University of Córdoba in Argentina and a Ph.D. in physical sciences from the UAM, developing her professional career at the Institute of Ceramics and Glass of the Spanish Research Council (CSIC). Research Professor of CSIC and the responsible of the GlaSS group (<http://glass.icv.csic.es>), with more than 250 publications in WOK (H index of 47), she has been the last president of the International Commission on Glass (ICG). She received the Gottardi Prize of ICG and the Phoenix Award from the international glass industry, being named Glass Person of the Year 2019. Now she is leading the International Year of Glass 2022, approved by the GA of United Nations on May 18, 2021.

THE UNITED NATIONS INTERNATIONAL YEAR OF GLASS-2022
A DREAM COME TRUE

THE AGE OF GLASS - AFFIRMATION AND CELEBRATION



Stephen Eskilson

professor of art history at Eastern Illinois University

Abstract: Prof. Eskilson will explore how glass came to play such a prominent role in the contemporary design world. His research traces the rise of glass back to the Bauhaus, the German art school founded by Walter Gropius in the aftermath of World War I. As Bauhaus ideals were reimagined in later decades, glass gradually came to symbolize the modern movement in a metaphorical sense while also literally spreading across the design landscape.

Biography: Stephen Eskilson is professor of art history at Eastern Illinois University. Eskilson received his Ph.D. in 1995 from Brown University. Aside from his book *The Age of Glass* (Bloomsbury 2017), he is the author of *Graphic Design: A New History* (Yale UP 3rd edition 2019) and the forthcoming *Digital Design: A History* (Princeton UP 2023).

SPEAKER



Steve Feller

B.D. Silliman Professor of Physics, Coe College

Abstract: Of fundamental importance to humankind has been the ability of light to be bent by glass. This has led directly to magnifying lens and to more powerful microscopes and telescopes. In this talk I will review the history and physical operation of each of these devices with ample illustration. Over time these devices have extended our relatively feeble eyesight to the very small and the very large. they have extended our visible light vision to other important parts of the electromagnetic spectrum such as the radio, microwave, infrared, ultraviolet, and the x-ray. From the modern era I will display spectacular images from the Hubble Telescope and Earthbound versions as well as, hopefully, the first images from the new James Webb Telescope recently launched (which will primarily non glassy still has a layer of glass on its mirror). The new telescope is designed to peer into the universe in its very early years of formation. What, for example, did the first galaxies look like?

While Galileo and Newton were among the leaders in the development of these devices; it is true that we are living in the time of the most intense use of light-bending devices. You are invited to join me in an exploration of this most important and fundamental use of glass in this the International Year of Glass.

Biography: Steve Feller has been a physics professor at Coe College for 43 years. During this time, he taught most courses in the undergraduate physics curriculum. His research centers on the atomic structure and physical properties of glasses, including many newly discovered invert regimes. In this area, he has worked with about 250 undergraduates, with whom he has published 170 papers in the refereed literature of the field and given over 300 presentations at well over 150 national and international conferences. Also, he has edited several books on glass science. He has a research-level interest in numismatics as well, or the study of the history of money. In this area he has published over 160 articles, parts of several books, and in 2007 he coauthored (daughter, Ray) *Silent Witnesses: Civilian Camp Money of World War II*, now the standard in the field.

In 2003, Feller was named Fellow of both The American Ceramic Society and the British Society of Glass Technology (SGT). In 2016, he became one of three Centennial Fellows of the SGT. He was named Iowa Professor of the Year (1995) by the Carnegie Foundation for the Advancement of Teaching. He was given the 1993 American Physical Society Prize to a Faculty Member for Research in an Undergraduate Institution. During spring and summer 1996, he served as a Fulbright Scholar to the United Kingdom where he did neutron scattering studies of glasses and crystals. He has been as visiting scholar to Greece, the U.K., Japan, China, and Austria. In 2017, he was the honoree of the International Borate Conference held at Oxford, U.K.

BENDING LIGHT WITH GLASS: IMAGES FROM THE COSMOS TO THE MICROBE

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the study.

[1] Based on sales figures, market share data on file

[2] IPS e.max CAD posterior crowns over a period 10 years. Replacement was due to technical failures like Fraktur/Chipping.

Heintze S., Clinical efficacy of monolithic crowns made of IPS e.max CAD on posterior teeth, Test Report, Ivoclar Vivadent, 2021.

[3] Rauch A., Reich S., Dalchau L., Schierz O., Clinical survival of chair-side generated monolithic lithium disilicate crowns: 10-year results. Clinical Oral Investigations, 2018, 22, p. 1763-1769.

[4] Fasbinder D. J., Neiva G., Heys D., Heys R. J., Clinical evaluation of glass ceramic material for chairside CAD/CAM crowns: 10-year report. Study report for Ivoclar Vivadent AG, 2017b.

[5] Boldt J., Spitznagel F. A., Lithium disilicate: Indications and scientific evidence, Deutsche Zahnärztliche Zeitschrift, 2017, 72 (4), p. 319-325.

[6] Güttlich J., Time difference IPS e.max CAD mode fine / fast CEREC Primemill, Test Report, Ivoclar Vivadent, 2021.

[7] LT, MT, HT, with IPS e.max CAD Crystall./ Glaze Spray or Self Glaze technique, 2 restorations.

Arnold L., IPS e.max CAD crystallization program durations of Programat CS2, CS3 and CS6, Test Report, Ivoclar Vivadent, 2021.

[8] Block shades and translucencies available on Ivoclar.com

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SPEAKER



Philip Galland
CEO, GlassWRX

Abstract: Today's waste streams are a sad legacy of the industrial revolution. They are byproducts of a cycle of take, make, and waste. This antiquated philosophy damages and even destroys natural ecosystems that support life on this planet. This is literally not sustainable and has put us on the verge of global catastrophe. At GlassWRX, our scientists, engineers, and systems thinkers are inventing ways to mine these very waste streams and reverse the cycle. We're creating new generations of advanced sustainable materials - With which we can help build the resilient cities and societies of tomorrow. Using technology as a design tool, we can replicate nature's ability to engineer price-less geological materials in seconds instead of millennia. These new materials are called Engineered Cellular Magmatics (ECMs). ECMs are for use in the design, build, operation, and maintenance of resilient and carbon offsetting Gray (concrete-based) and Blue-Green (air, water, earth-centered) infrastructure. ECM technology is economical and designed to heal local ecologies, reduce greenhouse gas emissions, create jobs, improve public health - And heal the planet. ECMs are made from both industrial and post-consumer upcycled waste glass.

Biography: Galland is a socially responsible entrepreneur and visionary with an enviable history of rapidly and sustainably building impact companies with transformational technologies. He is an artificial intelligence innovator and champion, and is a vocal proponent of Industry 5.0 and Circular Economics. Philip operates exclusively by his personal philosophy and guiding principle, "to do well; I will do good."

UPCYCLING WASTE GLASS INTO HIGH VALUE PLANET-SAVING MATERIALS

HOW SPECIALTY GLASS IS ENERGIZING OUR FUTURE: ENABLING HEALTH, ENERGY, AND SUSTAINABILITY



Frank Heinrich
CEO, SCHOTT Glass AG

Abstract: Society faces three major challenges today: (1) maintaining and improving health and making it accessible to everyone around the world, (2) finding new ways to generate climate neutral energy sources to meet the increasing demand, and (3) fighting climate change.

Specialty glass may not be the first answer that comes to mind in addressing these problems, however, this versatile material offers many solutions. Glass affects our daily lives in so many ways and without it, many of today's developments would not exist. It has contributed to major breakthroughs in life science and medicine.

For example, the unique properties of borosilicate glass ensure the safe delivery of life-saving medications such as the COVID-19 vaccine.

Glass also has the power to support new energy sources and can provide fascinating solutions that other materials cannot. It has the potential to advance solid-state batteries for electric vehicles, allowing a longer driving range. In the future, new energy sources could be realized using hydrogen technology or nuclear fusion supported by laser glass.

Even while we are making progress in the glass industry, we share the responsibility to find solutions for climate change. As an energy-intensive company, SCHOTT has defined a plan of action in order to reduce our carbon footprint and become climate neutral by 2030.

Biography: Dr. Frank Heinrich has been chairman of the Management Board of SCHOTT AG since June 2013. He is responsible for the business units Pharmaceutical Packaging and Tubing as well as for the corporate functions Research and Development, Compliance and Legal, Human Resources, Marketing and Communication, and Strategic Development.

In addition to his position at SCHOTT, he is also vice chairman of the Supervisory Board of the Würth Group, member of the Supervisory Board of B. Braun SE, president of the Federal Association of the German Glass Industry (BV Glas), member of the Presidential Board of the Federation of German Industries (BDI), and member of the German Science Council (Wissenschaftsrat).

He was born in 1962 in Berlin, Germany. After completing a degree in physics and a doctorate in engineering from the Technical University of Berlin, he began his professional career in business in 1992.

SPEAKER



Steven Jung

Chief technology officer of Mo-Sci Corporation

Biography: Dr. Steven Jung serves as chief technology officer of Mo-Sci Corporation. He is a member of the U.S. National Academy of Inventors and a Fellow of The American Ceramic Society and has 29 U.S. patents and 48 U.S. patents covering bioactive glass and biomaterials for bone, dental, and wound care healing.

FROM UNIVERSITY RESEARCH TO CLINICAL USE: A BIOMEDICAL
GLASS STORY (copresenting with Richard Brow)

AMERICAN GLASS MANUFACTURING– A LOVE LETTER

**Bob Lipetz**

Executive Director, Glass Manufacturing Industry Council

Abstract: Since the earliest days of this country, glass manufacturing has enabled the continued growth and vitality of American society. Glass making technology has progressed in lock step with the advances of the republic, from the early beginnings of hand blown and poured glass, to the current advanced technologies in America's modern factories. The glass manufacturing industry is as varied as the American enterprise, encompassing, fiberglass, flat glass, container glass, and many specialty glasses. Glass products are ubiquitous and enable every facet of American life, from architecture to transportation, from medicine to electronics.

Large glass companies employ tens of thousands and contribute significantly to the domestic product. Small glass companies also innovate and provide value. All American objectives, from global sustainability to improving the quality of life in our communities, are supported and enhanced by glass manufacturing.

The can-do spirit of America, the great example of enterprise that we call the American experiment, is reflected in the mirror of American glass manufacturing.

Biography: Bob Lipetz, MBA, is an association whisperer with a track record of growing professional associations. He has been the executive director of the Glass Manufacturing Industry Council for the past 11 years. During that time, Mr. Lipetz initiated numerous service lines benefiting the glass manufacturing industry. In 2012, he successfully brought the annual Conference on Glass Problems under the organization of the Glass Manufacturing Industry Council. As conference director, Mr. Lipetz has led the substantial growth and value of the conference. Also beginning in 2012, he organized and administered the Usable Glass Strength Coalition, a coalition of industry to support fundamental research at major universities. Mr. Lipetz is a member of the governing council of the International Commission on Glass. He has numerous articles and editorials published in trade and scientific journals. As the inaugural executive director of the Society of Chest Pain Centers, he grew the nonprofit from a start up to its current position as one of the most influential organizations in improving heart attack care. A graduate of the Ohio State University Fisher School of Business, Mr. Lipetz resides in Columbus, Ohio.

SPEAKER



Tammy Ma

Deputy Director, Lawrence Livermore National Laboratory

Abstract: The National Ignition Facility (NIF) at the Lawrence Livermore National Laboratory (LLNL) in the U.S. is the world's largest, most energetic laser, and is the largest optical system ever built. The 192 independent and very energetic laser beams of NIF are focused onto a miniature capsule the size of a BB containing fusion fuel to achieve conditions hotter and denser than those found at the center of the sun.

This past August, a record-breaking shot with 1.35 megajoules of fusion yield was achieved, more than two-thirds of the 1.9 megajoules of the laser energy going in. This equates to an energy gain of 70% of that needed for ignition (more energy out than we put in with the lasers). This experimental result, decades in the making, is a significant breakthrough for laser-driven inertial fusion. This talk will review the experimental results, the photonics advancements and many more technologies that made this breakthrough possible, and the implications for future research. Furthermore, these recent game-changing results on the NIF now lay the groundwork to explore laser inertial fusion as a path for clean energy and energy security.

Biography: Tammy Ma is the Advanced Photon Technologies Program Element Leader for High-Intensity Laser High Energy Density Science within the National Ignition Facility (NIF) and Photon Science Directorate at Lawrence Livermore National Laboratory (LLNL). Ma currently also serves as the Deputy Director for LLNL's Laboratory Directed Research & Development (LDRD) Program. Since joining LLNL, she has led many inertial confinement fusion experiments on the NIF, developed new x-ray diagnostics, and chaired the Lab-Wide LDRD program funding highly innovative research.

Tammy earned her B.S. degree in aerospace engineering from Caltech in 2005, and her M.S. in 2008 and Ph.D. in 2010 both from the University of California, San Diego.

She has authored or co-authored over 185 refereed journal publications and currently sits on the Fusion Energy Sciences Advisory Committee, providing advice to the U.S. Department of Energy's Office of Science on complex scientific and technological issues related to fusion energy and plasma research. Tammy was the recipient of the 2013 Presidential Early Career Award for Science and Engineering, the 2016 Stix Award for Outstanding Early Career Contributions to Plasma Research from the American Physical Society, a 2018 DOE Early Career Research Award, and the 2021 Fusion Power Associates Excellence in Fusion Engineering Award. She was also named 2019 Woman of the Year for the California 16th Assembly District. She is a Fellow of the American Physical Society.

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SPEAKER



Vahid Majidi

Director, Savannah River National Laboratory

Abstract: Almost fifty years ago, SRNL materials scientists began their endeavor to address challenges pertaining to the safe disposal of nuclear waste. These efforts came to fruition on April 29, 1996 when the Savannah River Site Defense Waste Processing Facility poured the first canister of high-level nuclear waste stabilized and encapsulated in glass. The aim was not only to incorporate long lived radionuclides into a stable waste form but to demonstrate with confidence that radionuclides would remain in a durable glass under unpredictable climate conditions at a geologic time scale of thousands of years. Without using radioactive waste for testing, researchers developed simulated waste glasses to evaluate hundreds of compositions to determine the controlling factors suppressing the release of radionuclides. Since those early days, SRNL's glass technical expertise has been subsequently applied for the immobilization of other waste streams in the U.S. and Internationally. We have also developed extensive skill sets related to fundamental and applied glass technology. Now that vitrification is accepted as the preferred embodiment for nuclear waste disposal, SRNL is leveraging our decades of experience in glass science to develop cutting-edge technologies based on sustainability and the environment that will revolutionize the way the world looks at glass.

Biography: Vahid Majidi is responsible for the management, operation, and strategic direction of Savannah River National Laboratory (SRNL).

Majidi is a former member of the senior executive service with direct reporting responsibilities to the U.S. Secretary of Defense, U.S. Director of National Intelligence, and the Director of the Federal Bureau of Investigation. He has more than 30 years of experience in the areas of chemistry, measurement science and technology, national and homeland security, science and technology policy, and nuclear nonproliferation.

Majidi previously served as the deputy assistant secretary of defense for nuclear matters, responsible for nuclear weapon surety and the acquisition and modernization of the nuclear weapons stockpile. From 2006-2012, Dr. Majidi served as assistant director for the Federal Bureau of Investigation's Weapons of Mass Destruction (WMD) Directorate, responsible for coordinating and managing its equities, activities, and investigations involving WMD. In 2003, he was appointed chief science advisor to the Department of Justice (DOJ) and was detailed to DOJ from Los Alamos National Laboratory (LANL), where he coordinated science and technology policy among DOJ component agencies and with state and local law enforcement entities. Dr. Majidi also served as the chemistry division leader at LANL and was a tenured associate professor of chemistry at the University of Kentucky.

GLASS THE ULTIMATE SEQUESTER AND SELF-SUSTAINING PRODUCT

RESEARCH FOR THE GLASS AGE

**John Mauro**

Professor and Associate Head for Graduate Education in the Department of Materials Science and Engineering, Pennsylvania State University

Abstract: From glass windows and containers to lenses and optical fiber, glass has proven to be one of the most important materials for enabling the development of contemporary human civilization. Owing to this indelible impact of glass on modern society, it has been proposed that we are now living in The Glass Age. The positive influence of glass on our world continues to grow as new glass products and processes are developed to address global challenges in energy, the environment, healthcare, information and communication technology, and more. In this presentation, we peer into our glass (not “crystal”) ball to predict some future advances in glass and technology that promise to address many of these grand challenges, as well as the new science that is required to make these technologies a reality. We hope that these new applications of glass will inspire students to pursue dedicated research in these areas to invent the new materials and processes required for solving these grand challenges and improving the quality of life for all of humanity.

Biography: John C. Mauro is professor and associate head for graduate education in the Department of Materials Science and Engineering at The Pennsylvania State University. John earned a B.S. in glass engineering science (2001), B.A. in computer science (2001), and Ph.D. in glass science (2006), all from Alfred University. He joined Corning Incorporated in 1999 and served in multiple roles there, including senior research manager of the glass research department. Mauro is the inventor or co-inventor of several new glass compositions for Corning, including Corning Gorilla® Glass products. He joined the faculty at Penn State in 2017 and is currently a world-recognized expert in fundamental and applied glass science, statistical mechanics, computational and condensed matter physics, thermodynamics and kinetics, and the topology of disordered networks. He is the author of over 300 peer-reviewed publications and is Editor of the *Journal of the American Ceramic Society*. He is co-author of “Fundamentals of Inorganic Glasses, 3rd ed.” (Elsevier, 2019) and the author of *Materials Kinetics: Transport and Rate Phenomena* (Elsevier, 2021). He is a Fellow of the National Academy of Inventors, with 62 granted U.S. patents and another ~20 additional patents pending. He is also a Fellow of The American Ceramic Society and the UK Society of Glass Technology.

SPEAKER



Donald McPherson

CEO and chief scientist, EnChroma

Abstract: Colorblindness affects 8% men and 0.5% women, with 4 of 5 having anomalous trichromacy, wherein one of the three photoreceptors (cones) is spectrally shifted, overlapping the neighboring cone leading to color confusion. Properly designed filters reestablish more normal photon capture by the cones. Color information is computed at the eye in special cells that pool information from surrounding individual cones. This channel information is sent to the thalamus and then the primary visual cortex (V1), where additional processing stages create visual perception.

Color vision models predict EnChroma eyewear will improve color contrast, in agreement with the colorblind's experience. I present recent clinical evidence (2019) that EnChroma eyewear help the colorblind make accurate color matches. A 2020 study showed improved color contrast perception above threshold. Performance improved over a two-week period, even without wearing EnChroma eyewear, demonstrating perceptual learning. A 2022 study confirmed this, and, using contrast sensitivity, extended it to show improved threshold performance. The improvement was seen with time of wear, but testing was made without wearing EnChroma eyewear. Cone-specific Visually Evoked Potential (VEP) measurements showed color-evoked signal induced by wearing EnChroma eyewear. The changed VEP in V1 indicates improved cortical color perception, and new perceptual learning.

Biography: Dr. Don McPherson is currently chief scientist at EnChroma in Berkeley, CA, where he develops technologies to assist the colorblind. McPherson designed EnChroma's line of eyewear for the colorblind, which are now sold worldwide. He is currently developing lighting systems for the colorblind and continuing his efforts to perfect a contact lens version. Recently EnChroma has extended its knowledge to develop eyewear for other types of color vision diseases, such as cone retinopathy. In 2017, McPherson and EnChroma were awarded the Tibbetts award by the SBIR for commercializing the NIH-funded research leading to EnChroma.

McPherson received a BGS (Math, Chemistry, Art) from Ohio University, an M.S. and Ph.D. in ceramics and glass from Alfred University, and was awarded an honorary doctorate from Alfred University in 2018.

A ROSE IS A ROSE IS A ROSE: WHAT COLORBLINDNESS REVEALS ABOUT PERCEPTION

THE ROLE OF FIBER GLASS FOR CONTRIBUTION TO SUSTAINABLE DEVELOPMENT GOALS

**Hiroaki Nomura**

President, Electric Glass Fiber America LLC, a US-based subsidiary of Nippon Electric Glass (NEG)

Abstract: Nippon Electric Glass (NEG) has a combined history of fiber glass manufacturing and research development for more than 70 years. This presentation will cover three major areas, 1) a brief review of major contributions of the fiber glass in renewable wind energy generation, transportation, and building thermal insulation, 2) melting process technology improvement in combination of the reuse of “waste” glass to lower energy usage and CO₂ reduction, and 3) NEG’s CO₂ emission reduction targets in both short term (2030) and long term (2050) in a joint global effort in meeting the specific goals under the United Nations’ Sustainable Development Goals.

Biography: Hiroaki Nomura graduated from Ritsumeikan University (Japan) in 1983 with a bachelor’s degree of Commercial Law. Mr. Nomura started his career at Nippon Electric Glass Co., Ltd. (NEG) in 1983 and serves as the president of Electric Glass Fiber America LLC (subsidiary of NEG) since 2019. The business focuses on manufacturing fiber glass products for a broad range of commercial composite applications, covering automobile, chemical transportation, wind turbine blades, construction materials, infrastructure, etc. For nearly 40 years of his tenure, Mr. Nomura has various leadership roles within NEG, vice president since 2014, general manager in charge of the sales and marketing in the Glass Fiber Division from 2010 to 2013, and general manager of the sales, marketing, and production planning from 1999 to 2001 in NEG (Malaysia).

SPEAKER



Sethuraman Panchanathan

Director, National Science Foundation

Abstract: The glass we see and touch, how and what it transforms, and even the utility it brings, is part of a complex sustainability story. The deeper meaning comes from what we cannot see, that glass is made from basic, inert ingredients with glass-making processes that are marvels of modern technology and engineering. The result is a product that can be recycled and reused infinitely. The ingredients and the final product won't harm the earth, the oceans, or what is stored inside. Glass is a product, as history teaches, that will sustain not just our need to create and inspire, but also our inspiration to transform what we do and how we do it in pursuit of a more sustainable way of life.

Biography: The Honorable Sethuraman Panchanathan is a computer scientist and engineer and the 15th director of the U.S. National Science Foundation (NSF). NSF is an \$8.5B independent federal agency and the only government agency charged with advancing all fields of scientific discovery, technological innovation, and STEM education.

Dr. Panchanathan has a distinguished career in science, technology, engineering, and education that spans more than three decades. He served as executive vice president of the Arizona State University Knowledge Enterprise, where he also founded the Center for Cognitive Ubiquitous Computing. Prior to becoming director of NSF, Panchanathan served on the National Science Board for six years and has also served on and chaired numerous high-level research and innovation organizations. He is a fellow of the National Academy of Inventors, the American Association for the Advancement of Science, the Association for Computing Machinery, and other prestigious science and engineering organizations. Dr. Panchanathan's scientific contributions have advanced the areas of human-centered multimedia computing, haptic user interfaces, person-centered ubiquitous computing technologies for empowering individuals with a range of abilities.

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SPEAKER



Sam Rubin

President and CEO, LightPath Technologies

Abstract: Infrared optics and glasses are beginning to enhance our everyday lives, enabling new applications and products that would have been considered science fiction only a decade ago. From thermal cameras that allow firefighters to find and rescue individuals caught in a fire, to temperature scanners that identify airport travelers with a fever, infrared optics are making our lives safer every day. The rapid commercialization and miniaturization of infrared detectors, combined with advances in infrared glass molding technology have enabled new applications that would have been cost prohibited in the past. Today, infrared optics play a key role in the emergence of autonomous vehicles through infrared LiDAR systems and are even integrated into the newest generation of smartphones. LightPath, a pioneer in glass molding technology, offers one of the largest selections of moldable infrared glasses of any optics manufacturer worldwide.

Biography: Sam Rubin is president and chief executive officer of LightPath Technologies, Inc. Before joining LightPath, Mr. Rubin held a senior executive role at Thorlabs, where he was responsible for Thorlabs' Imaging Systems Division, as well as global responsibility for all of Thorlabs' life science activities. Among the positions he held at Thorlabs, Mr. Rubin founded and grew Thorlabs' operations in China, and spearheaded its entry and significant growth in the life sciences market. Mr. Rubin also led new strategic initiatives for Thorlabs, including new product lines, acquisitions and growth into new markets. Prior to Thorlabs, Mr. Rubin co-founded XLight Photonics, an optical communication startup, which was later sold to a telecommunication's private equity firm. Mr. Rubin holds a bachelor of science degree in electronic engineering from Ben Gurion University, a Master of Business Administration degree from New York University, Stern School of Business, and is a graduate of the Executive Education, Program for Leadership Development at Harvard Business School.

INFRARED GLASS- TRANSFORMING IMAGING

GLASS WINDOW: PAST, PRESENT, AND FUTURE

**Naoki Sugimoto**

Executive officer and general manager, Materials Integration Laboratories, Asahi Glass Corporation (AGC)

Abstract: Glass window has historically started to be used as an interface between outside and inside building, which can introduce sunlight despite keeping out rain and wind. Then coated solar protection glass was developed to control the amount of solar energy penetrating into the building in order to keep the room cooler than normal glass. Also insulating coated glass has been introduced to reflect heat from the building back into the interior, preventing heat loss and contributing to the comfort of the occupants. This type of glass can be assembled into double or triple glazing. These windows contribute to energy savings of buildings and reducing GHG emissions. And near future, glass becomes a window for not only light but also new-generation radio waves. Novel technology which guides 28 GHz radio signals received from outdoors to indoors using a meta-surface lens is recently demonstrated. Glass window evolves continuously with development of a sustainable society.

Biography: Dr. Naoki Sugimoto is executive officer and general manager of Materials Integration Laboratories, AGC Inc., Japan. Management experience in AGC for R&D, Marketing, New Business Development, and Corporate Venture Program since 1985. Dr. Eng., Kyoto University, Japan (2004). Fellow, UK Society of Glass Technology (2019).

SPEAKER



Christopher Taylor

Executive director, Pilchuck Glass School

Abstract: Pilchuck's Executive Director will offer a brief history of Pilchuck Glass School and its role in the growth of America's studio glass movement. Continuing in the founding spirit of Artist Dale Chihuly, Pilchuck believes in an exchange of creative ideas by artists teaching artists. While centered on glass as a material, Pilchuck has expanded its glass printmaking or "vitreography" program, performance art, video, new digital technologies, arts scholarship, and community outreach. Looking forward, we hope to integrate more environmentally friendly practices, diversify our operations, and continue to lift the field of glass art and design.

Biography: Christopher R. Taylor is the executive director of Pilchuck Glass School. Since his appointment in 2018, he has focused on community relations, staff restructuring, improved financial systems, and significant fundraising.

Prior to coming to Pilchuck, Taylor was the president of The Clay Studio in Philadelphia. In his tenure in Philadelphia, Taylor focused on audience development, long-range planning, and launching of a capital campaign. From 2001–2006, he ran his own consulting firm, TaylorArts Group, which provided fundraising and planning services to small and mid-sized arts organizations in Pittsburgh, Chicago, and Philadelphia.

Taylor has served on a number of boards including American Craft Council, Artist Image Resource, Art Unleashed, and the Arts and Business Council of Greater Philadelphia. He has served as a grant review panelist for the PA Council on the Arts, Windgate Foundation, and the National Endowment for the Arts. He holds a BFA in sculpture and ceramics and a B.A. Religious studies from Indiana University of Pennsylvania. In 2007, he attained a masters in arts administration & policy from The School of the Art Institute of Chicago with a thesis topic of Arts Advocacy.

PILCHUCK: 50 YEARS OF INTERNATIONAL GLASS ART
EDUCATION

BREAKTHROUGH TECHNOLOGIES**Stefanie Tompkins**

Director, Defense Advanced Research Projects Agency (DARPA)

Abstract: Glass technology has played a significant role in many national security solutions, in systems ranging from sensor optics to ballistic protection to fiber optics. Since the inception of DARPA in 1958, the agency has been developing and exploiting advances in glass technology. This talk will briefly describe DARPA's past role in advancing the field of glass technologies, as well as current investments in science and technology that will enable future breakthroughs.

Biography: Stefanie Tompkins is the director of the Defense Advanced Research Projects Agency (DARPA). Prior to this assignment, she was the vice president for research and technology transfer at Colorado School of Mines.

Tompkins began her industry career as a senior scientist and later assistant vice president and line manager at Science Applications International Corporation, where she spent 10 years conducting and managing research projects in planetary mapping, geology, and imaging spectroscopy. As a program manager in DARPA's Strategic Technology Office, she created and managed programs in ubiquitous GPS-free navigation as well as in optical component manufacturing. Tompkins has also served as the deputy director of DARPA's Strategic Technology Office, director of DARPA's Defense Sciences Office, as well as the acting DARPA deputy director.

Tompkins received a bachelor of arts degree in geology and geophysics from Princeton University and master of science and doctor of philosophy in geology from Brown University. She has also served as a military intelligence officer in the U.S. Army.

SPEAKER



George Tysowsky

DDS, MPH, Head of Global Training and Education,
Senior Vice President Technology and Professional
Relations, Ivoclar, Inc.

Abstract: Incorporating glass materials into dental restorative products has revolutionized oral health. Dentists now have the ability to restore tooth form, function and strength while achieving highly esthetic, natural looking teeth. The unique chemistry of IPS emax featuring a glassy matrix and lithium disilicate crystals has allowed dental professionals to achieve high mechanical properties while maintaining high translucency for optimal esthetics making it the most successful glass ceramic dental material to date. IPS emax glass ceramic material is the market leader for restoring missing tooth structure. This glass material offers a clinical survival rate of 96%* over a ten year period with over 1 million restorations being placed. This presentation will highlight the use of glass ceramics to improve patient care and the advancements of the future.

Biography: Dr Tysowsky serves as Head of Global Training & Education, and Senior Vice President of Technology and Professional Relations for Ivoclar, Inc. where he is responsible for Research & Development and Education activities for North American operations. He is as an adjunct faculty member at the SUNY at Buffalo School of Dental Medicine and Eastman Dental Center at the University of Rochester.

He is a Fellow of the American College of Dentistry and the Greater New York Academy of Prosthodontics, which awarded him its Achievement Award. He is also an Honorary Member of the American College of Prosthodontics. He has served as a board member of the Academy of General Dentistry Foundation, the American Academy of Cosmetic Dentistry, the American College of Prosthodontics Foundation, and has also served as the Chairman of the Board for the Oral Health America Foundation. Dr. Tysowsky presently serves on the Deans Councils of Harvard University, AT School of Dentistry, University of Illinois, Chicago and previously at the Univ of Buffalo School of Dentistry and Univ of West Virginia. He earned a DDS degree from the University of Minnesota, School of Dentistry, and a MPH degree from Minnesota's School of Public Health.

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SPEAKER



Ludovic Valette

Vice president, Global Technology and Engineering

Abstract: The shapes, colors, and possible uses of glass have been a constant source of inspiration for creativity and innovation throughout history—and still are today. Glass inspires innovation because of its ability to transform something ordinary into something extraordinary—you may remember how a simple glass bottle helped create unique memories during a special occasion? Over time, the innovative inspiration and transformational power of glass has increased not only its applications and uses, but also the technology and engineering used to produce it.

Biography: Ludovic Valette leads Owens-Illinois technology and engineering, and is part of the Global Leadership Team reporting to the Company's CEO. He is responsible for the worldwide development, integration, and deployment of all process and product technologies, while elevating and accelerating innovation and integrating it into O-I's strategy and priorities. He leads Research and Development, Engineering, and Technology Strategy and Integration. His role also includes technology licensing and technical assistance to O-I's licensees and joint ventures.

Valette holds a master's degree in material sciences and engineering, and a Ph.D. in macromolecular chemistry and composites from the National Institute of Applied Sciences in Lyon, France. He is a Stanford Graduate School of Business alumni (Stanford Executive Program). He has authored or co-authored more than 20 publications in peer-reviewed journals and holds more than 25 granted patents and patent applications. He is a member of The Glass Futures' Board of Directors. He joined O-I in 2013 from The Dow Chemical Company, where he held various leadership positions on three continents.

(INSPIRE + TRANSFORM) X SUSTAIN = GLASS

ON THE SHOULDERS OF GIANTS

**Arun Varshneya**

President and CEO, Saxon Glass Technologies, Inc.

Abstract: Over the five millennia, glass as a material has provided innumerable products that improve quality of human living; windows, lenses, light bulbs, fiber-optics and glass containers are just a few examples. No doubt, much of the underlying science, engineering, technology and arts have been developed by individuals whose ingenuity and hard work paved the way. We stand on the shoulders of these Giants. In this International Year of Glass, we celebrate those US-based glass pioneers who are no longer among us, however, whose legacy lives on. We will present short biographical sketches of 6-8 such leaders with emphasis on their contributions. Guess who?

Biography: Arun Varshneya, affectionately called “the Glass Guru,” is most known for his seminal work in the chemical strengthening of glass. His entrepreneurship business, Saxon Glass Technologies, Inc., based in Alfred, NY, has supplied nearly 0.4 billion strengthened borosilicate glass cartridges over the past 25 years to deliver epinephrine from an EpiPen® autoinjector to counteract anaphylaxis shock in the event of severe allergies. His pioneering work on chemically strengthened display glass covers forms the basis of glass usage in all smartphones.

Varshneya received his B.S. degree in glass at Sheffield University and an M.S. and Ph.D. from Case Western Reserve University. Following an illustrious career as an industrial scientist at Ford and GE Lighting spanning more than a decade, he joined Alfred University as a faculty in 1982. At Alfred, he taught nearly all the courses in glass science and technology, as well as the basic of materials engineering business. He is the author/co-author of about 165 publications on “cover-to-cover” topics in glass and 12 patents. His textbook, “Fundamentals of Inorganic Glasses,” now in its 3rd edition, is one of the most admired by glass students and professionals globally. He is the invited author of the 13-page entry “Industrial Glass” in the Encyclopedia Britannica, a Distinguished Life Member of The American Ceramic Society, an Honorary Fellow of the Society of Glass Technology UK, recipient of International Commission on Glass President’s Award, and recipient of the lifetime achievement “Gold Medal” award of the Case Alumni Association.

SPEAKER



James Warren

Director of the Materials Genome Program, NIST

Abstract: The US Materials Genome Initiative has just begun its second decade. With a goal of accelerating the discovery, design, development, and deployment of new materials into manufactured products, the MGI is focused on the creation of a materials innovation infrastructure. My institution, the National Institute of Standards and Technology (NIST), has framed its support for the MGI around the need for a data infrastructure that enables the rapid discovery of existing data and models, the tools to assess and improve the quality of those data, and finally the development of new methods and metrologies based on that data. In partnership with agencies across the government, academia, and industry, these approaches are now yielding significant advances. Of particular note is the potential for machine learning and artificial intelligence applications upon these troves of data, which is now being borne out, and the vast consequent opportunities for new discoveries. Additionally, and in light of the many changes in how materials R&D is done, the MGI has just released a new strategic plan, charting a plan for the next 10 years of an evolving materials innovation infrastructure, which I will review in this presentation.

Biography: Dr. James A. Warren is the director of the Materials Genome Program in the Material Measurement Laboratory of the National Institute of Standards and Technology (NIST). After receiving his Ph.D. in theoretical physics at the University of California, Santa Barbara, in 1992, he took a position as a National Research Council post-doc in the Metallurgy Division at NIST. In 1995, with three other junior NIST staff members, he co-founded the NIST Center for Theoretical and Computational Materials Science, which he has directed since 2001. From 2005–2013, he led Thermodynamics and Kinetics Group. His research has been broadly concerned with developing both models of materials phenomena, and the tools to enable the solution of these models. In 2010–11, Dr. Warren was part of the ad hoc committee within the Office of Science and Technology Policy's National Science and Technology Council (NSTC) that crafted the founding whitepaper on the Administration's Materials Genome Initiative (MGI). Since 2012, Dr. Warren has served as the Executive Secretary of the NSTC MGI Subcommittee, coordinating interagency efforts to achieve the goals laid out in the MGI.

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SPEAKER



Wendell P. Weeks

Chairman and Chief Executive Officer of Corning Incorporated

Abstract: Without glass, the world would be unrecognizable. Glass encases the lightbulbs in our homes, it's in the windows through which we view the world, it's in the damage-resistant vials that transport life-saving medical treatments, it's in the touch-screen devices we use to learn and conduct business, and it's at the heart of the fiber-optic cables transmitting data on beams of light moving about 125,000 miles per second to help us communicate with each other.

Glass is only increasing in relevance. We see it as a material with almost unlimited potential. We know what we can do to glass: we can make it strong, we can adjust its optics, we can change its chemical properties, we can influence its thermal expansion behavior, we can alter its electronic properties, and obviously we can transform its color. But, what about what we can achieve with glass?

At Corning, we believe glass enables growth, prosperity, and opportunity. We see a future in which glass could help immobilize radioactive waste, make safer batteries, improve biomedical implants, mitigate climate change by restoring the Arctic, and more. In this talk, Mr. Weeks will share his point of view on how this material, which has facilitated so much human progress, will benefit our shared future.

Biography: Wendell P. Weeks has served as Corning's chief executive officer since April 2005 and chairman of the board since April 2007. He has been a member of the company's board of directors since December 2000. As CEO, Weeks has focused on creating new growth drivers and building a bigger, stronger, and more agile company.

Weeks began his career with Corning in 1983 in the finance group. In his 38 years with the company, he has held a variety of financial, business development, commercial, and general management roles, including strategic positions in the company's television, specialty glass, and optical communications businesses.

In 1996, Weeks was named vice president and general manager of Corning's optical fiber business. In early 2001, he was named president of Corning's Optical Communications division, where he led through both dynamic market growth and the subsequent challenges of market declines. Weeks became Corning's president and chief operating officer in April 2002. In this role, he helped lead the company's restructuring and return to profitability following the telecommunications industry crash. During his tenure as CEO, he has overseen acquisitions in optical communications, life sciences, and display technologies. He has also played an instrumental role in numerous innovations, including the development of Corning® Gorilla® Glass. Moreover, he has earned 33 U.S. patents.

Weeks is a graduate of Lehigh University and earned a master of business administration from Harvard University as a Baker Scholar. He serves on the board of directors at Amazon.com, Inc. and is a member of the Liveris Academy Honorary Board. He is also on the board of trustees for the Corning Museum of Glass. Weeks received Harvard Business School's 2014 Alumni Achievement Award. In November 2014, he was awarded the Gold Tower Order of Industrial Service Merit from Korea's Ministry of Trade, Industry, and Energy for contributions to the display technology industry.

GLASS: VITAL TO OUR FUTURE

THE ART OF GLASS: THREE MILLENNIA OF CREATIVITY AND EXPRESSION



Karol Wight

Executive director, The Corning Museum of Glass

Abstract: Since the moment humankind created glass, its properties and possibilities for experimentation have led to centuries of creativity and innovation. The partnership of art and science has led to the creation of spectacular objects and artistic works, with each new generation expanding the boundaries of innovation.

Biography: Karol Wight became executive director at The Corning Museum of Glass in August 2011 and served as curator of ancient and Islamic glass from August 2011 through July 2017. In January of 2015, she was promoted to the position of president and executive director of the Museum and is now responsible for oversight of all Museum activities. A specialist in ancient glass, she has curated or co-curated numerous exhibitions on ancient art and glass, including Ennion and his Legacy: Mold-Blown Glass from Ancient Rome (CMoG, 2015), and Molten Color: Glassmaking in Antiquity (J. Paul Getty Museum at the Getty Villa, ongoing). In January 2017, Wight was appointed to a U.S. State Department advisory post on the Cultural Property Advisory Committee by former President Barack Obama where she represented the interests of museums. Previously, she was senior curator of antiquities at the J. Paul Getty Museum, located at the Getty Villa in Malibu, California. While there, Wight directed public programs and changing exhibits at the Getty Villa, and managed the Department of Antiquities. Wight received her doctorate in art history from the University of California, Los Angeles. She is a member of the Association of Art Museum Directors and holds a place on AAMD's Art and Archaeology Task Force. She is also a member of the Board of Trustees of the International Association for the History of Glass.

SPEAKER



Mark Zupan

President, Alfred University

Abstract: Dr. Zupan will overview the pivotal role that Alfred University has played in developing glass science and creating glass art

Biography: Mark Zupan is the 14th president of Alfred University, founded in 1836, one of the oldest institutions of higher education in New York State.

Zupan came to Alfred University from the Simon Business School at the University of Rochester where he was the Olin Professor of Economics and Public Policy as well as the director of the Bradley Policy Research Center. Prior to that, he served two terms as dean of both the Simon School and the University of Arizona's Eller College of Management. He has also been an associate dean of masters programs and faculty member at USC's Marshall School of Business, and a visiting faculty member at Dartmouth's Tuck School of Business. He earned a B.A. in economics from Harvard (1981) and a Ph.D. in economics from MIT (1987).

Zupan has authored three books and over forty scholarly articles. His most recent book, published in 2017, is titled "Inside Job: How Government Insiders Subvert the Public Interest." Zupan's opinion pieces have appeared in outlets such as *The New York Times*, *Wall Street Journal*, *Los Angeles Times*, *Arizona Republic*, *BloombergBusinessweek.com*, *Kiplingers*, *Rochester Democrat and Chronicle*, *Rochester Business Journal*, and *Huffington Post*.

Zupan has been on the boards of the AACSB, the Harley School, HNP Capital, iVEDiX, the Graduate Management Admissions Council (GMAC), Constellation Brands, PAETEC Holdings, the Farash Corporation, Five Star Bank, Stocker Yale, Steuben Trust, Northern Trust, the Western New York Regional Economic Development Council, the Allegany County Economic Development Agency, and the United Way of Southern Arizona, as well as on the editorial boards for academic journals such as *Public Choice*, *Economic Inquiry*, and the *Journal of Business Economics*.

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