

Gary S Fischman, PhD
(FACerS, FNICE)

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Profile

- Highly skilled in leadership and management in a variety of settings.
- Materials Scientist with a high level of expertise in ceramics and hard materials and a broad experience base in academia, government and industry.
- Highly skilled in communicating with people including the general public, technical specialist, executives and policy developers
- Familiarity with many organizations within the US federal enterprise.
- Experience in medical device regulatory issues, failure, trade dress and intellectual property issues including legal opinion, rebuttals, depositions and court testimony.
- 30 years of expertise in the field of ceramic engineering with a high level of expertise in advanced materials, coatings and materials for manufacture of medical devices

Education

Ph.D Ceramics – University of Illinois, Urbana-Champaign, 1985. Thesis -Hydrogenation of Silicon Carbide

M.S. Ceramics – University of Illinois, Urbana – Champaign, 1983. Thesis – CVD of Silicon Carbide

B.S. Ceramic Engineering

Other educational experience

Immersion course in Clinical Research for Dentistry – University of Washington – summer 2001

EXPERIENCE:

Future Strategy Solutions, LLC, Gambrills, MD (1999 – present)

Principal and Owner

www.futurestrategysolutions.com

- Owner, manager, and marketer for this consulting organization. Named my personal consultancy Future Strategy Solutions and incorporated it in 2010 upon leaving the National Academies.
- I currently lead several US materials for medical device activities

- Chair of ASTM F04.13 (Medical and Surgical Devices and Materials – Ceramics)
- US delegate and international convener for ISO TC150 WG 12 (Implants for Surgery – Coatings)
- US delegate for ISO TC150 SC1/WG3 (Implants for Surgery – Ceramic materials)
- Advise medical device industry on materials issues including specifications, testing, qualification of materials and supply chain issues.
- Have written expert opinions for medical industry for use with regulatory bodies (e.g., FDA, EPA, China's SFDA)
- Expert witness for failure and other issues (e.g., IP and trade dress) related to medical ceramics this includes deposition and testimony in court cases.
- Advised Federal organizations including Homeland Security and Department of Energy on materials based policy issues.
- I work with other small consultancies as appropriate in which we have dealt with a variety of industries and organizations including (Market growth strategy, oil industry, research laboratories, nanotechnology based suborganizations, materials industry, defense industry amongst others).
- Future Strategy Solutions has an international footprint. I have been asked to submit proposals to companies as a contractor or subcontractor for work outside of the US (specifically both China and the Russian Federation).

Covalent Coating Technologies LLC, East Hartford CT (2011 – 2019)

Part owner and CTO

www.covalent-coating-technologies.com

- Cofounded and part owner of the company
- Developed the materials supply chain for the current technology base
- Developed the strategic direction and the testing needs for the current coating technology

In role of part owner and CTO, I have advised through the development of the concepts, the business plan and the technology. Covalent Coating Technologies (CCT) currently boasts several potential revenue streams and one patent. Revenue streams include coatings for dental/medical devices (USP 9,421,303 – Aug 23, 2016) as well other coating, embedding and sealing technologies.

National Science Foundation, Arlington, VA (2012 – 2013)

Expert (temporary 1 year expert) in CMMI (Civil, Mechanical and Materials Innovation)

- Program Director – Materials and Surface Engineering (MSE) tasked to run and close program. This activity spanned two proposal windows and required
 - Assessed over 350 proposals both within the MSE and other associated programs.

- Reviewed and managed post award reports for all awards within the MSE portfolio.
- Created, organized and ran over 20 volunteer panels including all aspects of panel management.
- Interacted with other internal programs and, as necessary, created and ran co-managed panels.
- Determined funding for all proposals within my program, technical advise on other programs.
- Met and discussed potentials with researchers.
- I was asked (and accepted) to be the NSF member to interagency OSTP/CHNS committee on Facilities and Infrastructure developing a strategy for coordinating the US high security laboratories.
 - Report available at http://www.whitehouse.gov/sites/default/files/microsites/ostp/NSTC/nstc_-_federal_security_laboratory_facility_and_infrastructure_-_sept._2014.pdf
- Tasked as MSE Program Director to help develop the new Materials Engineering and Processing (MEP) program and fold the Materials and Surface Engineering program into the new MEP program.

National Research Council, The National Academies, Washington, DC (2005 – 2010)

- Concurrent director of three boards at the National Academies:
 - Director, National Materials Advisory Board (NMAB) (2005 – 2010)
 - Director, Board on Manufacturing and Engineering Design (BMED) (2006 – 2010)
 - Director, Board on Infrastructure and the Constructed Environment (BICE) (2008 – 2010)
- Led, directed and managed the operations of both volunteer and the professional staff of all three boards simultaneously.
- Responsible for all reports under my programs (elucidated in NAS Reports – Below)
- Managed two Division level roundtables (The Biomedical Engineering and Materials Applications Roundtable – BEMA; The Defense Materials Manufacturing and Infrastructure Roundtable – DMMI)
- Developed federal clientele to create meaningful products from my boards
 - Worked with federal agencies often at the DAS and Commissioner (Interior BLM) level to determine desires, needs, focus and statement of work for National Academies work activities.
 - Worked with congressional members (House and Senate) and committees to determine the need for National Academy reports and if needed, often Congressional language to support National Academy.
 - Created a collaborative interaction between the materials experts on Congressional Hill and my staff.
- Advised and actively worked with professional staff to develop the work product including the development of working relationships between the client and the

staff officer, committee recruitment, panel development, full interaction at the panel level (often as referee) from opening meeting through final report writing and review process.

- Developed and led the strategic processes and operations for each board and the integration of multiple boards.
- Represented the board and its community in federal and professional venues.
- Was the NMAB, BMED and BICE negotiator for projects that were shared between my boards and other National Academy Boards.

Biomedical Applications Materials Consultant (1999 – 2010)

- This is the same activity as Future Strategy Solutions – but some activities that were pre 2010 are delineated here.
- I chose to become consultant when the activity became extremely busy based on the international recall of ceramic orthopaedic heads produced by St. Gobain - Desmarquest. I worked with industry to both understand the failure of the heads, the potential issues and how to move forward with a new ceramic materials (BioloX Delta) that was making its way into the market.
- Expert defense witness for the failure of several ceramic orthopaedic components.
- Advised and negotiated the purchase of a ceramic company by a medical device manufacturer.
- Materials supply chain analysis for large machinery.

University of Illinois at Chicago, College of Dentistry, Chicago, IL (1999 – 2002)

- Director, Division of Biomaterials and Technology – Restorative Dentistry
- Associate Professor of Bioengineering (Engineering College, courtesy appt)
- Associate Professor of Orthopaedic Surgery (Medical College, courtesy appt)
- Associate Professor of Restorative Dentistry (Dental College)
- Led the Restorative Dentistry Department as part of a three member team (2 other division heads) during the 1 year sabbatical of the Department Head.
- Developed the materials and clinical research capabilities at the University of Illinois College of Dentistry. This included developing a path to learn clinical research for the clinical faculty and strategy for the development of clinical research within the 3rd and 4th year clinics.
- Dental College member of IRB
- Dental College Member of the University's Research Resource Consortium (RRC)
- Member of the University's Institutional Review Board (IRB)

US Food and Drug Administration, Rockville, MD (1995 – 1999)

Materials Engineer specializing in Ceramics in OST (now OSEL)

- Ran the ceramics materials laboratory in the Office of Science and technology (OST – now OSEL)
 - Maintained and managed the equipment for ceramic processing and testing.

- Developed the Taber Abraser testing method for coating tenacity (now ASTM F1978).
- Managed (FDA funded) NIST project on the release for SRM 2910 (Calcium Hydroxylapatite - original) for use with ASTM and ISO conformance standards.
- Designed and managed intern work for various students including at least 3 from Gallaudet University for the Deaf
- Consulted for ODE, OSB and OC within CDRH on numerous review teams as the materials and sometimes mechanical engineering expert.
 - Served on a number of 510(K), PMA and PDP committees as expert in materials and mechanics.
 - Worked informally with ODE, OSB and OC to tease out the engineering materials and mechanics to developing issues.
 - Testified for various FDA expert panels as requested
 - Augmented field inspection teams on materials compliance issues.
- Chaired STG for Dental and ENT when the STG activities were started until the time I left.
- Worked with the Office of Criminal Investigation within OC to develop special tools for the determination of tampering of stainless steel surgical instruments.

New York State College of Ceramics, Alfred University, Alfred, NY (1986-1995)

Tenured Associate Professor through 1996

- Assistant Professor in Ceramic Engineering (1986 – 1992)
- Associate Professor in Ceramic Engineering (1992 – 1995)
- Developed the bioceramics activities and acted as the first Director, Institute for Bioceramics (1991 – 1995)
- In developing the bioceramics activities was also asked to be the first Director, Alfred Satellite of the NSF Industry University Center for Biosurfaces (IUCB)
- Upon arrival, brought together 7 faculty and built the High Performance Ceramic Laboratory at Alfred University
- Taught coursework in non-oxide materials, thermomechanical properties of ceramics, electronic and magnetic properties of ceramics, physical metallurgy, engineering science (capstone), engineering operations (capstone), diffusion in solids, biomedical materials and applications, mechanics of materials, computer programming.
- Advised graduate students (MS and PhD)
- Sabbatical in Washington DC working at both NIST and FDA (1994)

Xylon Ceramic Materials, Alfred, NY (1989-1995)

Co-owner

- Instrumental in developing a Mg-PSZ hip ball for orthopaedic applications.
- Negotiated the contract to be the first company to inhabit the Ceramic Corridor Incubator facility in Alfred site of the Alfred – Corning Ceramic Corridor.
- Ceramic aspects of 510(k) – K912641.

State University of New York at StonyBrook (SUSB-StonyBrook), StonyBrook, NY (1985 – 1986)

Postdoctoral Research Associate in Materials Science and Engineering

- Ran the Plasma Spray Laboratory
- Rebuilt and operated a RFPE-CVD unit to make amorphous silicon
- Patented a methodology for spraying ball bearings (USP 4704298)

ADDITIONAL ACTIVITIES/TRAINING/PROFESSIONAL DEVELOPMENT (partial list):

- Charter member selection committee for Canada Governor General's Innovation Awards (2015-2017)
- Edison Awards oversight (post steering committee) (2016-present)
- Edison Award Steering Committee (2012 – 2016)
- Associate Editor – Journal of the American Ceramic Society (present)
- Editorial Board – Journal of ASTM International (present)
- Chair F04 subcommittee 13 (F04.13) on Ceramics (present)
- US Delegate ISO TC150/SC1/WG3 Ceramics (present)
- US Delegate ISO TC150/WG12 on Coatings (present)
 - Convener (convening officer of chair) of WG12 (present)
- ABET Board of Directors (1998 – 2003)
- Board of Governors – American Association of Engineering Societies (1996 – 2003)
 - Vice Chair (1996 – 2000)
- Board of Directors, American Ceramic Society (2002 – 2006)
- President, National Institute of Ceramic Engineers (1996 -1998)
- Former US delegate ISO TC 194 – ceramics
- Member ASTM C28 – Advanced Ceramics (present)
- Member ASTM E56 on Nanotechnology (present)
- Member ASTM E60 on Sustainability (present)
- Member – National Materials Advisory Board (2002 – 2005; before being asked to become Director)
- Summer Institute in Clinical Dental Research Methods – Summer, 2001, University of Washington, Seattle, WA
- Research Engineer, Building Research Station, Technion, Haifa 1979-80.

HONORS AND AWARDS:

- 2019 – Patrick G Laing Award – ASTM F04
- 2012 – Invited session speaker keynote 2 sessions, CeramSib, Moscow, Oct 2012
- 2010 – Invited Keynote Speaker – SAMPE, Oct 2010
- 2010 - 2011– Invited Speaker – Castrol 2020 – company strategic development activity – multiple meetings

- 2009 – Invited Speaker, Global Co materials symposium, Tohoku, Japan
- 2009 – Arthur L. Friedberg Memorial Lecture Award, National Institute of Ceramic Engineering and the American Ceramic Society
- 2002 – Selected as volunteer member of the National Materials Advisory Board (resigned as vice-chair of the board in 2005 when asked to serve as Staff Director)
- 2002 – Selected as a Fellow to the National Institute of Ceramic Engineers
- 1997 & 2010 – ASTM F04 MOSES (Most Outstanding in Standards and Sensitivity Award).
- 1999 – Selected as Judge for the National Engineering Design Challenge National Finals, February 24, 1999 – unable to serve due to an automobile accident that day.
- 1996 – Selected as Fellow to the American Ceramic Society
- 1995 – Karl Schwarzwaldler – Professional Achievement in Ceramic Engineering Award – National Institute of Ceramic Engineers and the American Ceramic Society
- 1992 – Invited delegate to US –Italian program in Faenza, Italy and spokesman for US delegation on Bio-Ceramics in Rimini, Italy

CONFERENCES ORGANIZED/CHAired

- Session Chair: First Annual Buffalo Materials Science Symposium, Cheektowaga, NY April 1988.
- Organizational Chair: Second Annual Buffalo Materials Science Symposium, Cheektowaga, NY March 1989
- Organizational Chair: McMahon Symposium, Alfred NY, October 1989
- Session Chair: Advanced Composites Working Group, Cocoa Beach Florida, January 1990
- Organizational Chair: Covalent Ceramics, Symposium N, MRS Fall Meeting, Boston Mass, Nov 1990.
- Chair Symposium for Covalent Ceramics and Diamond Coatings, Engineering Science Division meeting, Cocoa Beach, FL 1991
- Organizer for Ceramics in Biomedical Applications Workshop, June 2 - 4, 1993, Rochester, NY
- Organizational Chair: Covalent Ceramics, Symposium N, MRS Fall Meeting, Boston Mass, Nov 1993.
- Session Chair: “Mechanical Behavior I - Fatigue and Creep in Ceramic/Ceramic Composites” 18th Annual Conference on Composites and Advanced Ceramics
- Co-Chair and organizer: Biomedical and Biological Applications of Ceramics, American Ceramic Society, Indianapolis, IN, April, 1994.
- Organizer for Ceramics in Biomedical Applications Workshop, June 8-10, 1994, Alfred, NY
- Session Chair on Bio-Ceramics, Basic Science Division Meeting “Ceramic Manufacturing for the 21st Century,” 1994, Louisville, KY.
- Co-Organizer: NIST conference on Total Joint Replacement, Gaithersburg, MD, Sept, 1994.

- Co-Chair and organizer: Biomedical and Biological Applications of Ceramics, American Ceramic Society, Cincinnati, OH, April, 1995
- Co-Chair and organizer: Covalent Ceramics, MRS Fall Meeting, Boston MA, Nov, 1995.
- Co-Chair and organizer: Bio-Ceramics: Materials and Applications, American Ceramic Society, Indianapolis, IN, April, 1996.
- Organizational Chair: Symposium SII on Ceramics in Corrosive Environments, American Ceramic Society, Cincinnati, OH, May 1997.
- Program Chair The 23rd Annual Cocoa Beach Conference: An International Conference on Engineering Ceramics and Structures, ECD division of the American Ceramic Society, Cocoa Beach Florida, Jan 24-29, 1998
- Co-Chair and organizer, Bio-Ceramics: Materials and Applications, American Ceramic Society, Indianapolis, IN, April, 1999
- Co Organizer, Symposium on Coating Metrology, National Institute of Standards and Technologies, August 23-24, 1999, Gaithersburg, MD.
- Co-Organizer, Bio-Ceramics, Materials and Applications, American Ceramic Society, St. Louis, MO, April 2000
- Co-Organizer, Bio-Ceramics, Materials and Applications, American Ceramic Society, Indianapolis, IN, April, 2001
- Nominated chair Co-Chair and organizer, FDA Inter-Center Science Forum 2001, winter 2001. – stepped down due to job change
- Co-Organizer, Bio-Ceramics focus group at the ECD meeting, Cocoa Beach, January, 2002.
- Co-Organizer, Bio-Ceramics, Materials and Applications, American Ceramic Society, St. Louis MO, April, 2002
- Co-Organizer, Bio-Ceramics, Cocoa Beach Meeting, Cocoa Beach, FL, Jan, 2003
- Co-Organizer, Bio-Ceramics, materials and Applications, American Ceramic Society, Nashville, TN, April, 2003.
- Co-Organizer, Closed workshop on Assessment Science – BEMA April 22-23, 2003.
- Co-Organizer, Next Generation Biomaterials at MS&T'05, Materials Science & Technology 2005 Conference and Exhibition, Pittsburgh, PA Sep 25-28, 2005.
- Rapporteur and Editor at the 1st International Ceramics Congress, June 2006, Toronto CA
- International Organizing Committee for the 2nd international Ceramics Congress, June 2007, Verona, Italy
- Lead organizer, Emerging Opportunities Symposium, International Conference on Advanced Ceramic Materials, Daytona Beach, and January, 2008
- National Materials Advisory Board Special Topics Session at MS&T 08, Pittsburgh, PA, October, 2008.
- National Materials Advisory Board Special Topics Session at MS&T 09, Pittsburgh, PA, October 2009
- Organizing Committee MCARES 2012, January 2012, Clearwater Beach, FL.
- Session Chair, Sustainable Materials, MCARES 2012, January 2012, Clearwater Beach FL.

- Organizing Committee for the 4th International Ceramic Congress, July, 2012, Chicago, IL
- Session Chair, Bioceramics, 4th International Ceramic Congress, July 2012, Chicago, IL.
- Lead Organizer, ASTM Workshop on Coatings for the Medical Device Industry, November 2018, Washington, DC.

PUBLICATIONS:

- G Klassen, J Laughner and G Fischman, "Microstructure Evolution of a Sol/Gel Mullite," in Science of Sintering, ed, DP Uskokovic, H Palmour III, and RM Spriggs, Plenum Press, NY (1989) pp 135-140.
- R Jaschek, B Blumenthal, J Root, J Breindel and G Fischman, "Property Changes in Alpha Silicon Carbide Powder by Annealing in Hydrogen Rich Atmospheres," Proceedings of the Second International Conference on Ceramic Powder Processing Science, Fall, 1988, Deutsche Keramische Gesellschaft, 1989
- P.H. McCluskey, G.S. Fischman, and R.L. Snyder "High Surface Area Chemically Synthesized Y₂O₃" IBID
- H Wang and G Fischman, "Formation of SiC Whiskers from Silicon Nitride Powders," *Jour Amer Ceram Soc* 74 [7] 1519-22 (1991).
- H Wang and G Fischman, "Formation of SiC Whiskers/Fibers through Direct Interaction of Silicon Nitride with Graphite," Extended Abstracts: Covalent Ceramics, ed., GS Fischman, RM Spriggs and TL Aselage, Materials Research Society, Pittsburgh, Pa (1990) p41-44.
- Extended Abstracts: Covalent Ceramics, Edited by GS Fischman, RM Spriggs and TL Aselage.
- H Wang and G Fischman, " SiC Whisker/ Si₃N₄ Composites by a Chemical Mixing Process," *Ceram Eng Sci Proc* 12 [9-10] pp, 2135-2141 (1991).
- H Wang and GS Fischman, "*in-Situ* Synthesis of Silicon Carbide Whiskers from Silicon Nitride Powders," *Jour Amer Ceram Soc* 74 1519-22 (1991)
- D Suttor and GS Fischman, "Densification and Sintering Kinetics in Sintered Silicon Nitride," *Jour Amer Ceram Soc*, **75** [5] 1063-67 (1992).
- J Simmins, P McCluskey, G Fischman and R Snyder, Thermodynamics and Kinetics of the CO₂ Breakdown of 123 Superconductors, (Under Review by the American Ceramic Society).
- H Wang, Y Berta and G Fischman, " Microstructure of SiC whiskers grown in Si₃N₄," *Jour Amer Ceram Soc* 75 [5] 1080 - 1084 (1992)
- H Wang and G Fischman, "Surface Diffusion vs Dissolution - Precipitation in the Vapor - Liquid - Solid Whisker Growth Mechanism," (Under review by the Journal of Crystal Growth).
- H. Wang, G. S. Fischman, "Role of the liquid droplet surface diffusion in the vapor-liquid-solid whisker growth mechanism," *J. Appl. Phys.* 76 (1994), 1557
- YS Her, E Matijevic, WR Wilcox, OG Bailey and GS Fischman, "Continuous Precipitation of Monodispersed Yttrium Basic Carbonate Powders. II. Sintering," *Jour Mat Sci* **23** (1988) 2951-2959.
- H Wang and GS Fischman, "Thermochemical Studies of the Reactions between Silicon Nitride and Carbon," *Thermochemica Acta*, 207, 201-208 (1992).

- H Wang and GS Fischman, “Kinetic Studies of Si₃N₄ - C Reaction,” (Accepted for publication to Jou Therm Anal).
- G Fischman, “Thermo-mechanical Properties of Silicon Carbide,” (Invited lecture, to be published in the proceedings of the First Microwave Absorbing Materials for Accelerators”, February 21-22, 1993, CEBAF, Newport News, VA.
- A Graf, D Hoelzer, G Fischman, “Preparation of a Porous Hydroxyl apatite for TEM Evaluation,” Paper SI - 4 - 94, American Ceramic Society, Indianapolis, IN, April 25, 1994.
- G Fischman, “Ceramics for Inert Biomedical Applications”). Bio-Ceramics: Materials and Applications, Ed. Gary Fischman, Alexis Clare and Larry Hench, The American Ceramic Society, Westerville, OH (1995) pp 1-10.
- G Fischman, “Characterization of Bio-Ceramics,” Bio-Ceramics: Materials and Applications, Ed. Gary Fischman, Alexis Clare and Larry Hench, The American Ceramic Society, Westerville, OH (1995) pp 59-73.
- R Giordano, JL Drummond, G Fischman and N Burlingame, “Porcelain Bonding to Zirconia”, Bio-Ceramics: Materials and Applications, Ed. Gary Fischman, Alexis Clare and Larry Hench, The American Ceramic Society, Westerville, OH (1995), p 91-101.
- Bio-Ceramics: Materials and Applications, Ed. Gary Fischman, Alexis Clare and Larry Hench, The American Ceramic Society, Westerville, OH (1995)
- Bio-Ceramics: Materials and Applications II, Ed. Richard P. Rusin and Gary S Fischman, The American Ceramic Society, Westerville, OH (1996).
- Covalent Ceramics II - Science and Technology of Non-Oxides, Ed Andrew R. Barron, Gary S. Fischman, Michael A Fury and Aloysius F. Hepp, Materials Research Society, Pittsburgh, PA (1994)
- Covalent Ceramics III - Science and Technology of Non-Oxides, Aloysius F. Hepp, Prashant N. Kumta, John J. Sullivan, Gary S Fischman and Alain E Kaloyeros, Materials Research Society, Pittsburgh, PA (1996)
- E Park, R Condrate, D Hoelzer and G Fischman, “Interfacial Characterization of Plasma Spray Coated Calcium Phosphate on Ti-6Al-4V,” Jour Mat Sci: Mat med 9 (1998) 643-649.
- GS Fischman, “Precision and Bias Statement for ASTM F04.15.08 Abrasion of Coatings Using a Taber Abraser, an Interlaboratory Study,” Accepted as a committee report to ASTM, November 5, 1998.
- GS Fischman, “A Case for Specifying Materials – The Perspective of an FDA Engineer,” anticipated to be published in the proceedings of the Larry Hench Symposium, Cocoa Beach FL, January, 1999.
- E Ustundag and G Fischman, editors, 23rd Annual Conference on Composites, Advanced Materials, and Structures, American Ceramic Society (1999).
- Knoernschild KL, Bacon W, Fischman GS, Campbell SD. Effect of pH on Endotoxin Affinity for Metal-Ceramic Alloys, Journal of Prosthetic Dentistry 86 [6] 644-649 (2001)
- G Fischman, “Medical Applications of Materials Survey – July 2003,” available as .pdf directly from me.
- G Fischman, “Validated Microstructure Assessment of Femoral Heads,” Jour ASTM Int, 1[5] (May 2004) Paper ID JAI 12199.

- Reports supervised by me by the several boards of the National Academies (available on request)
- J Yiang, JR Kelly, O Bailey and G Fischman, “Porcelain-titanium bonding using a novel commercially-available system,” Jour Prosth Dentistry 116 [1] pages 98-101 (2016)
- Structural Ceramics Chapter in Biomaterials by Elsevier – In publication

PRESENTATIONS:

- G Fischman, Adventures in Advanced Ceramics, Invited Talk to the Olean, NY section of the American Society of Mechanical Engineers, Olean, NY, Nov 15 1988.
- G Fischman, Atmospheric Effects on the Thermal Processing of Covalent Ceramics, Invited Talk to the National Bureau of Standards, Gaithersburg, MD Feb 9, 1988.
- G Fischman, Thermal Analysis as a Tool in Sintering Research, Invited Talk to Carborundum Co. Niagara Falls, NY, April 1989.
- G Klassen, J Laughner and G Fischman, "Microstructural Evolution of a Sol/Gel Mullite," Quadrennial Meeting on the Science of Sintering, Herzeg Novi, Yugoslavia, August, 1989
- G Fischman, Moving into Bio-Ceramics: A Case Study, Invited talk to the Baltimore Washington Section of the American Ceramic Society, 6 August, 1991, Gaithersburg MD.
- G Fischman, “Thermo-mechanical Properties of Silicon Carbide,” Invited Paper to the Workshop on Microwave-Absorbing Materials for Accelerators (MAMAs), Feb 22-23, 1993, CEBAF, Newport News, VA.
- G Fischman, “Materials Testing Laboratory,” Medical Applications of Ceramics Workshop, Invited Paper, Rochester, NY, June 1993.
- G Fischman, “Ceramics in Medicine”, Invited lecture to Southern Tier Chapter of ASM, October, 1993.
- G Fischman, “Oxynitride Coatings on Metals”, Invited lecture to Zimmer, Warsaw, IN, March 22, 1994.
- G Fischman “Ceramics for Orthopedics,” Invited Lecture to the Western New York Section of the American Ceramic Society, Invited Paper, March 31, 1994, Corning, NY, March, 1994.
- G Fischman, “Ceramics for Orthopedic Applications,” Invited Lecture to NASA Lewis Research Center, Cleveland, OH, May 5, 1994.
- G Fischman, “Inert Bio-Ceramics”, Classroom Seminar at Johns Hopkins University, April, 1996
- G Fischman, “The Role of Standard Reference Materials in Bio-Ceramics,” American Ceramic Society Symposium “Bio-Ceramics: Materials and Applications” Indianapolis, IN, April 17, 1996
- G Fischman, “Toward Performance Standards in Medical Device Materials,” Oak Ridge National Laboratories, Oak Ridge, TN, Sept, 1996.

- G Fischman “Introduction to Ceramics” Food and Drug Administration Course on Materials, March, 1997, Rockville, MD
- G Fischman “Introduction to Composites” Food and Drug Administration Course on Materials, March, 1997, Rockville, MD
- G Fischman “Abrasion in Biomedical Devices” Food and Drug Administration Course on Materials, March, 1997, Rockville, MD
- G Fischman, “Inert Bio-Ceramics”, Classroom seminar at Johns Hopkins University, March, 1997, Baltimore, MD
- G Fischman, S Brown, T Woods, et al, “Abrasion of Plasma Sprayed Coatings for Use in Orthopedic and Dental Implants,” Annual Meeting of the American Ceramic Society, May, 1997, Cincinnati, OH
- G Fischman (FDA) and D Marlowe (FDA) A Case Study on Standards Development at the FDA, Conference, Using Voluntary Standards in the Federal Government, NIST, Gaithersburg, MD Sept 1997
- G Fischman, “Materials in Medical Devices” Baltimore-Washington chapter of the American Ceramic Society and TMS joint meeting, Chevy Chase, MD, Feb, 1998
- G Fischman, “Inert Bio-Ceramics”, Classroom Seminar at Johns Hopkins University, March, 1998
- G Fischman, “Ceramics: Consistently Modern Materials”, Invited talk to a joint meeting of the New York Academy of Sciences - Engineering Section and the New York Chapter of the American Institute of Chemical Engineers, New York, New York, April 8, 1998.
- G Fischman, “Developing Biomedical Materials”, Graduate Seminar at Alfred University, April, 1998
- G Fischman, “Introduction to Ceramics,” Food and Drug Administration Course on Materials, May, 1998, Rockville, MD.
- G Fischman, “Introduction to Composites,” Food and Drug Administration Course on Materials, May, 1998, Rockville, MD.
- G Fischman, “Materials Design,” Food and Drug Administration Course on Materials, May, 1998, Rockville, MD.
- G Fischman, “Regulation and Standards: Materials in Medical Devices,” Invited talk to the Annual Meeting of the American Ceramic Society, April, 1999, Indianapolis, IN.
- G Fischman, “Bio-Ceramics”, Classroom Seminar at Johns Hopkins University, February, 1999, Baltimore, MD.
- G Fischman, “Bio-Ceramics”, Classroom Seminar at Johns Hopkins University, February, 2000, Baltimore, MD.
- G Fischman, “Creation of an Assessment Tool: Abrasion Resistance of Plasma Sprayed Coatings for Orthopedic Applications,” Lecture given to the UI-Urbana Champaign Department of Material Science and Engineering Graduate Research Seminar, April 2000, Champaign, IL
- G. Fischman, “Ceramics and metals in Orthopedic Devices,” Lecture given to UIC Orthopedics Department, June 2000, Chicago, IL.
- G Fischman, “Assessment of Nano-particles for Use in Medical Devices,” Fine Ultrafine and Nano-Powders 2000, Montreal, Quebec, Canada, October 2000

- G Fischman, “Bio-Ceramics, Classroom Seminar at Johns Hopkins University, February 2001, Baltimore, MD
- G Fischman, “Medical and Surgical Specifications and Tests for Ceramics,” Joint ASTM – ACerS Symposium on Standards for Advanced Ceramics, Indianapolis, IN, April 2001
- G Fischman, “Science Based Biomaterials Testing,” Biomedical Engineering Materials and Applications Roundtable, National Materials Advisory Board of the National Research Council, Washington, DC, 11 June 2001
- G Fischman, “How ceramics work,” Classroom seminar at Johns Hopkins University, February 2002, Baltimore, MD.
- G Fischman Diagnostics and Characterization of Ceramics: The Tortuous Path, Alfred University Graduate Seminar, April, 2002.
- G Fischman, How to Propose, Develop and Verify Standard Reference Materials for
 - Biomedical and Other Areas, ASTM C28 Advanced Ceramics Symposium at the Annual Meeting of the American Ceramic Society, May 2002, St Louis, MO.
 - G Fischman, Future of Biomedical Industry: Role of Regulatory and medical Malpractice issues, Panel Discussion for 21st Southern Biomedical Engineering Conference, September 28th, 2002, Bethesda, MD.
 - G Fischman, “New Generation Bio-Ceramic – Ceramax,” Innovations in Orthopedics, New Orleans, LA, Feb 3, 2003.
 - G Fischman, “Bio-Ceramics”, Classroom Seminar at Johns Hopkins University, February 10, 2003, Baltimore, MD.
 - G Fischman, “Design Rationale for Delta,” DePuy International Interlaken Ski Meeting, Victoria-Jungfrau Hotel, Interlaken, Switzerland, February 25, 2003
 - G Fischman, “Relative Risk in Materials for Biomedical Applications,” ASM Materials Solutions Conference and Exposition, Pittsburgh, PA, October 13-15, 2003.
 - G Fischman, “Bio-Ceramics”, Classroom Seminar at Johns Hopkins University, Feb 9, 2004, Baltimore MD.
 - G Fischman, “Bio-Ceramics” Classroom Seminar at Johns Hopkins University, Feb 20, 2005
 - G Fischman, “Advances and Trends in Bio-Ceramics,” 6th Pacific Rim Conference on Ceramic and Glass Technology, Sept, 2005, Maui, HI
 - G Fischman, “Bio-Ceramics” Classroom Seminar at Johns Hopkins University, Feb 21, 2006
 - G Fischman, “Biomedical Engineering Materials and Applications” OMTEC, Rosemont, IL June 06
 - G Fischman, “Infrastructure Renewal: Providing Services into the 21st Century,” Workshop keynote speaker for The Nationals Infrastructure Crisis – Penn State’s Response, April 15th, 2009 – State College, PA.
 - G Fischman, “Directions in Materials Science: the US,” in Paving the Future through materials Science, Invited Speaker for The Interdisciplinary Science of Nano-Materials, Global COE Program International Conference, September 25th, 2009, Sendai Japan

- G Fischman, “Ceramics in a 21st Century Materials World,” A.L. Friedberg Memorial Lecture, MS&T 2009, October, Pittsburgh, PA
- G Fischman, National Materials Advisory Board Activities and Board of Manufacturing and Engineering Design Activities and the Board on Infrastructure and the Constructed Environment – I am invited to give overviews often several times a month to various agencies and departments within agencies, various Congressional committee staffs and Professional Organizations.
- G Fischman, “Materials Perspective, 2020,” Castrol 2020 – Strategic Planning, 8 September, 2010, Palo Alto, CA.
- G Fischman, “Creating the Needed Materials for the 21st Century,” SAMPE keynote, 12 October, 2010, Salt Lake City, Utah
- G Fischman “Creating Advanced Ceramics for Orthopaedic Implant: Ceramic Design,” CeramSib 2 November, 2012, Moscow, Russia.
- G Fischman, “Ceramics in Medical Devices: Current and New Directions,” CeramSib 2 November, 2012, Moscow, Russia.
- Webinar- “Navigating the World of Medical Standards and Regulations for Medical Devices,” for the American Ceramic Society, February 2017.
- Navigating the World of Medical Standards and Regulations for Medical Devices, Ceramics Expo, Cleveland, May 2017.
- Innovating with Materials, Nexus Symposium, Miami, May, 2017
- Coatings for Biomedical Applications – Invitation from OMTEC, Chicago June 2019.
- Panel for materials forum – Invitation from SAMPE – Charlotte, NC, May 2019
- Lecturer for NuSpine – European Union Graduate studies in materials for spinal replacement 2021.
 - Interpreting the ISO 10993 standard as it relates to materials
- ISO and ASTM standard specifications in ceramics

Legal Opinions

- Various reports, rebuttal reports on hip fracture
- Expert for Plaintiff with respect to hard materials
- Patent claims analysis
- Materials issues: properties and trade dress

NAS Reports

The following National Academies of Sciences Reports were done under my responsibility which included full program oversight such as editorial content, budgets, final sign-off, assurance that they stayed within appropriate clearance level (when appropriate), negotiations with federal agency as necessary. NMAB refers to the National Materials Advisory Board, BMED refers to the Board on Manufacturing and Engineering Design and BICE refers to the Board on Infrastructure and the Constructed Environment. In 2010, the National Materials Advisory Board and the Board on

Manufacturing and Engineering Design were merged into the National Materials and Manufacturing Board.

Board	Year	Publication
NMAB	2009	Review of the Bureau of Reclamation's Corrosion Prevention Standards for Ductile Iron Pipe
NMAB	2009	Assessing Corrosion Education
NMAB	2008	Proceedings of a Workshop on Materials State Awareness
NMAB	2008	Integrated Computational Materials Engineering: A Transformational Discipline for Improved Competitiveness and National Security
NMAB	2008	Managing Materials for a Twenty-First Century Military
NMAB	2007	Assessment of Millimeter-Wave and Terahertz Technology for Detection and Identification of Concealed Explosives and Weapons
NMAB	2007	Fusion of Security System Data to Improve Airport Security
NMAB	2007	Proceedings of the Materials Forum 2007: Corrosion Education in the 21 st Century
NMAB	2006	A Matter of Size: Triennial Review of the National Nanotechnology Initiative
NMAB	2006	Proceedings from the Workshop on Biomedical Materials on the Edge: Challenges in the Convergence of Technologies
NMAB	2006	Defending the U.S. Air Transportation System Against Chemical and Biological Threats
NMAB	2005	Globalization of Materials R&D: Time for a National Strategy
NMAB	2005	Going to Extremes: Meeting the Emerging Demand for Durable Polymer Matrix Components
NMAB	2005	High-Performance Structural Fibers for Advanced Polymer Matrix Composites
NMAB	2005	Nanotechnology for the Intelligence Community
BMED	2006	A Path to the Next Generation of US Banknotes: Keeping them Real
BMED	2006	Is That Real? Identification and Assessment of the Counterfeiting Threat for U.S. Banknotes (Interim Report)
BICE	2009	Sustainable Critical Infrastructure Systems
BICE	2009	Evaluation of Future Strategic and Energy Efficient Options for the U.S. Capitol Power Plant
BICE	2009	Advancing the Competitiveness and Efficiency of the U.S. Construction Industry
BICE	2008	Assessment of the Bureau of Reclamations Security Program
BICE	2008	Construction Research at NIOSH: Reviews of Research Programs of the National Institute for Occupational Safety and Health

Patents

- USP 4704298 – H Herman, GS Fischman, G Bancke, “Coating Spherical Objects” filed 31 July, 1986.
- USP 9421303 – OG Bailey, G Fischman, P Benjanaru, “Fusion of biocompatible glass/ceramic to metal substrate” filed 6 March 2014.

MEMBERSHIP :

- American Society for Testing and Materials International
- American Ceramic Society
- Materials Research Society