

CURRICULUM VITAE

Jeremy L. Gilbert, Ph.D.

University Address

Wyss Endowed Chair for Regenerative Medicine
Professor of Bioengineering
Editor-in-Chief: Journal of Biomedical Materials
Research - Part B: Applied Biomaterials
Department of Bioengineering
Clemson University
Director, CU-MUSC Bioengineering Program
Professor of Orthopaedics
Medical University of South Carolina
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EDUCATION

Ph.D., 1987 Carnegie Mellon University, Pittsburgh, PA

Metallurgical Engineering and Materials Science, and Biomedical Engineering

M.E., 1983 - Carnegie Mellon University, Pittsburgh, PA

Metallurgical Engineering and Materials Science

B.S., 1981 S.U.N.Y. at Buffalo, Buffalo, NY

Engineering Science, Cum Laude

PROFESSIONAL EXPERIENCE

January 1, 2017 - present: ***Hansjörg Wyss Smart State Endowed Chair for Regenerative Medicine and Professor of Bioengineering***, Clemson University, Charleston, SC

January 1, 2017 – September 1, 2022: ***Adjunct Professor***, Department of Orthopaedics, Medical University of South Carolina, Charleston, SC

January 1, 2017 – present: ***Director***, Clemson-MUSC Bioengineering Program, Clemson University and Medical University of South Carolina, Charleston, SC.

October 2014-September 2016: ***Cheney Senior Faculty Fellow in Medical Technologies and Visiting Professor***, Institute of Medical and Biological Engineering, University of Leeds, Leeds, UK

October 2014-January 2015: ***Visiting Professor***, University of Virginia, Department of Materials Science and Engineering

September 2013 – September 2021: ***Special Government Employee***, Food and Drug Administration, Medical Devices Committee

May 2009-present: ***Editor-in-Chief***, Journal of Biomedical Materials Research – Part B: *Applied Biomaterials*

October 2008 - December 31, 2016: **Professor of Biomaterials**, Department of Biomedical and Chemical Engineering, and Founder *Syracuse Biomaterials Institute*, Syracuse University

January 2007- present: **President and Chief Technology Officer**, Syracuse Bio-Materials Company, LLC

July 2004-September 2008: **Professor and Associate Dean for Research and Doctoral Studies**, Department of Biomedical and Chemical Engineering, L.C. Smith College of Engineering and Computer Science, Syracuse University

January 2002-June 2004: **Professor and Chair**, Department of Bioengineering and Neuroscience, L.C. Smith College of Engineering and Computer Science, Syracuse University

January 1999-January 2002: **Professor**, Department of Bioengineering and Neuroscience, L.C. Smith College of Engineering and Computer Science, Syracuse University, Professor of Mechanical, Aerospace and Manufacturing Engineering, L.C. Smith College of Engineering and Computer Science, and Adjunct Research Professor, Department of Orthopedic Surgery, S.U.N.Y. Upstate Medical University, Syracuse N.Y.

March 1993-January 1999: **Associate Professor with tenure**, Division of Biological Materials, Department of Basic and Behavioral Sciences, Northwestern University Dental School, and the Department of Biomedical Engineering, McCormick School of Engineering, Northwestern University

February 1988-March 1993: **Assistant Professor**, Division of Biological Materials, Northwestern University Dental School, and McCormick School of Engineering, Department of Biomedical Engineering, Northwestern University

February 1983 - present: **Biomaterials Consultant**

May 1987 to October 1987: **Research Associate**, Department of Metallurgical Engineering and Materials Science, Carnegie Mellon University

September 1981 to May 1987: **Research Assistant**, Department of Metallurgical Engineering and Materials Science, Carnegie Mellon University

AWARDS AND HONORS

Riley Diversity Leadership Fellow, Furman University 2021
The Hip Society, 2020
Society For Biomaterials Service Award, 2020, Glasgow Scotland, May 19, 2020
President's Invited Lecture, The Hip Society, Las Vegas, 2019
Hansjörg Wyss Endowed Chair in Regenerative Medicine, Clemson University, January 1, 2017
Stevenson Lecturer, Syracuse Biomaterials Institute, March 4, 2016
Cheney International Faculty Fellow, University of Leeds, Leeds, UK, Oct. 2014-Sept. 2016
Excellence in Graduate Education Award, Syracuse University Graduate School, 2012
Fellow, International Union of Societies of Biomaterials Science and Engineering, June, 2012
President, Society for Biomaterials, 2010-2011
College of Fellows of American Institute for Medical and Biological Engineers (AIMBE), 2004
23rd Annual Eugene W. Skinner Memorial Lecturer, Northwestern University, 1996
Omicron Kappa Upsilon, National Dental Honor Society, Alpha Chapter, 1996
Bayne Scholar Award, 1992
Berkheiser Prize Winner for Orthopedics Research, 1991

Carnegie Mellon Bioengineering Symposium Award, 1987
Allegheny-Ludlum Fellowship Award, 1985
National Institutes of Health Traineeship Award 1981-1983

AFFILIATIONS

The Society for Biomaterials
Electrochemical Society
Orthopedic Research Society
National Association of Corrosion Engineers
The Hip Society

U.S. GOVERNMENT ADVISORY COMMITTEES, EDITORIAL BOARDS, SOCIETY WORK

1. NIH Consensus Development Conference on Total Hip Replacement, September, 1994
2. U.S. Food and Drug Administration, Consultant to the Orthopedic and Rehabilitation Devices Advisory Committee, Oct. 1997-2002
3. Panel member, NIH/NIAMS and NIH/NIDR Scientific Review Group, SBIR Program, Oct. 1997-2002
4. NIH/NIAMS, Chair, Scientific Review Panel for SBIR/STTR program, SSS-5 special study section, Muscular, Skeletal & Dental Integrated Review Group, 2000-2002
5. Editorial Board: Journal of Biomedical Materials Research, 2000-2002
6. American Academy of Orthopedic Surgeons, Musculoskeletal Research Agenda: Bioengineering and Biomaterials panel member, 2003
7. NIH/NIAMS, R03 Study Section Panel Member, June, 2000-December 2003
8. NIH/NIBIB, Grant Review, 2002-2006
9. Chair, Orthopedic Biomaterials Special Interest Group, Society for Biomaterials, 2001-2002
10. Member of Bylaws and Publications Committees of Society for Biomaterials, 2000-2002
11. Chair, Workshop on Nanobiomaterials for Society for Biomaterials 2002 annual meeting Tampa Florida
12. Assistant Editor, Journal of Biomedical Materials Research-Part A, 2002-2010
13. Council Member, Society for Biomaterials, Chair Membership Committee, 2003
14. Editorial Board: Journal of Biomedical Materials Research, Part B: Applied Biomaterials, 2004-2009
15. Chair, Workshop on Metals in Orthopedic Implants, Orthopedic Research Society meeting, San Francisco, 2004
16. Chair, Symposium on Nanobiomaterials, American Chemical Society, Philadelphia, PA, 2004
17. Panel member, NIH Musculoskeletal Tissue Engineering (MTE) Study Section, 2005-2008
18. Panel member, NIH Musculoskeletal Oral and Skin Sciences (MOSS) Study Section, 2005-2006
19. Panel Member, NIH, Skeletal Biology and Structural Regeneration (SBSR) Study Section, 2006-2008
20. Chair, Organizing Committee, American Society for Materials (ASM) Materials and Processes for Medical Devices Annual Meeting, Desert Palms, CA, September 23-25, 2007
21. Peer-Reviewer for National Research Council of Canada, 2005-present
22. Workshop on Embedded Metal Fragments, U.S. Army, Aberdeen Proving Ground, May 14, 2008
23. Strategic Planning Committee for ASM-International, Materials and Processes for Medical Devices, 2009-2013
24. Chair, Organizing Committee, American Society for Materials (ASM) Materials and Processes for Medical Devices Annual Meeting, Minneapolis, MN, August 10-12, 2009
25. *Editor-in-Chief*, J. Biomedical Materials Research – Part B: Applied Biomaterials, 2009-present
26. President, Society for Biomaterials, 2010
27. Grant reviewer for Austrian Science Foundation, 2009

28. National Academy of Sciences, Study Reviewer for: "Research Opportunities for Corrosion Science and Engineering", 2010
29. Chair, Strategic Planning Committee, ASM-International's Medical Materials Committee, 2011-2012
30. Acta Biomaterialia Gold Medal Award Committee, Soc For Biomat representative, 2012-present
31. FDA Invited Speaker to the Orthopedics and Rehabilitation Advisory Panel, June 26-27, 2012
32. Panel Member, The Orthopaedic and Rehabilitation Devices Panel of the Medical Devices Committee of the Food and Drug Administration, for expertise in Biomaterials and Materials Science, September 2013-August 2021
33. Member of Organizing Committee, 4th Tribocorrosion Conference, Glasgow UK, April 2014.
34. Editorial Board for Journal of Bio-Tribocorrosion, 2014-present
35. Associate Editorial Board Member, Biomaterials, Frontiers in Bioengineering and Biotechnology and Materials (Nature Publishing Group), 2014 – present
36. External Advisory Board, Department of Biomedical Engineering, S.U.N.Y. at Buffalo, 2015 – present
37. External Advisory Board, Department of Materials Science and Engineering, Carnegie Mellon University, 2015 – 2020
38. Advisory board member for SCBIO, 2017-2019
39. Participant in the Health Care Economic Development Efforts of Charleston Regional Development Agency, 2017-2019
40. Member, organizing committee, Regenerative Medicine Workshop, March 21-23, 2019, 2020, Wild Dunes, Charleston, SC

RESEARCH FUNDING HISTORY

1. Currently Active Support:
 - a) **Post-Market Surveillance of a Permanent Female Birth Control Device**, Gilbert JL, PI (Subcontract), \$926,465, Bayer/Covance, 10/1/19-9/31/24.
 - b) **Accelerated Test Method Development for Taper Testing**, DePuy Synthes, \$483,000, 12/1/19-11/30/22.
 - c) **Tribocorrosion Studies of Orthopedic Alloys**, DePuy Synthes, \$246,311, 1/1/2022 – 6/1/27.
 - d) **Training in Craniofacial and Oral Health Research (T-COHR) Program**, T-32 Training grant, NIDCR, PI: Hai Yao, 10/1/21-9/30/26, Co-I and preceptor.
2. Proposals Pending Review
 - a) **Sub-nano to Nanometer Wear and Tribocorrosion of Titanium and Cobalt-Chromium Oxide-Metal Surfaces** NSF Division of Materials Research, Metal and Metallic Nanostructure, \$455174, 6/1/23-5/31/2026.
 - b) **The Effect of Electric Fields on the Corrosion of Medical Alloys**, National Science Foundation, \$450,000, 6/1/23 – 5/31/2026 (Co-PI with J Ahn, Syracuse U)
 - c) **Single Right Ventricle Heart Failure Phenotypes: The Role of Diastolic Function**, Shahvar Chowdhury (PI) *Projected Project Period: 04.04.2023 – 03.31.2028, FOA: PA-20-185, JL Gilbert (Co-I): \$482,531 (Subcontract).*
3. Proposals in Preparation:
 - a) **Bio-Corrosion Mechanisms in Modular Total Hip Replacements**, NIH R01, in preparation, PI: Gilbert, JL
4. Past Funded Proposals as PI, total costs. (1998-2019)
Adhesion Test Method Development for Dehydrating Hydrogel Contact Lenses, Gilbert JL (PI), Bausch and Lomb, \$45,000, 6/1/19-5/31/20.

MoRe Alloys for Biomedical Applications, \$50,000, 1/1/19-12/31/19

Impact of gaseous contamination and high humidity on the reliable operation of information technology equipment in data centers, ASHRAE, PI: J Zhang, (Co-PI), \$245,000, 6/1/2016-5/31/2019.

Mechanically Assisted Crevice Corrosion of Si₃N₄ – Metallic Biomaterial Junctions, Gilbert JL, PI, Amedica, \$73,000, 8/1/17-4/30/19.

Dimensional Stability of Soft Contact Lenses In Multipurpose Storage Solutions, \$233,000, 9/15/2017-8/31/2018, Bausch & Lomb.

Research On Orthopedic Implant Corrosion Testing, Stryker Orthopedics, Master Research Agreement 10/30/14-10/29/19.

Acquisition of an electron microprobe at Syracuse University: a central New York regional user facility. NSF MRI, PI: J. Thomas, Co-PI, \$750,000, 10/1/2016-9/31/2017.

Understanding Implant Surfaces, Tribocorrosion and Bioelectrochemistry, Depuy Orthopedics, 12/1/12-5/31/17, \$816,000

Biomaterials Analytical Instrumentation Gift, Bausch and Lomb, 11/15/14-12/31/16 \$1.2M.

Effect of Microseparation on Taper Fretting Corrosion of Hip Stems, DePuy International, Co-PI's Mazen Al-Hajjar Sophie Williams, University of Leeds (PI), Consultant, 6/1/15-12/31/15.

Taper Testing and Design, Stryker Orthopedics, 6/1/15-5/31/16, \$62,000, 1 year.

Analysis of Retrieved Stryker Total Hip Replacements, Stryker Orthopedics, S Kurtz, PI, 1 y, \$60,000, \$12,500 to SU.

The Effect of Roughness on the Fretting Corrosion of Screw-Rod Spinal Implants of CoCrMo and Ti, Medtronic Spine, 7/1/14 – 6/31/15, \$44,000.

Fretting Corrosion of Modular Neck-Stem Interfaces in Total Hip Replacements, Stryker Orthopedics, Gilbert (PI) 11/1/11-12/31/13, \$193,000.

Indentation Testing and Micromechanics Analysis of Contact Lenses, Bausch & Lomb, 10/1/12 – 5/31/13, \$50,000

Fretting Corrosion of Spinal Implants and Alloys, Medtronic, Inc, Gilbert, PI, 2011-2012, \$148,000.

Stick-Slip Analysis of Disposable Blood Pressure Cuffs, Welch Allyn, June 1, 2012 – Aug 30, 2012, \$6500.

Electrochemical Effects on Bacteria, Blue Highway, D Ren, PI, 2009-2011, \$20,000

Fretting Crevice Corrosion Test System Development for Orthopedic Materials, Depuy Orthopaedics, Inc. \$123,000, 1/1/08-8/31/10

Electrochemical Control of Orthopedic Implant Surfaces for Enhanced Biological Interaction, JL Gilbert, (PI), Depuy Orthopedics, \$125,000, 3/07-11/08

Corrosion Testing of Coatings for Orthopedic Implants, Stryker Orthopedics, 10% effort, \$105,000, 12/1/05- 7/31/07

Nanomechanical Investigation of Wear of UHMWPE at the Micron Spatial Scale, Depuy Orthopedics, JL Gilbert, PI, \$248,000, 1/1/03-12/31/05

Mechanically Assisted Corrosion of Stainless Steel-Cobalt Chrome Modular Couples, Stryker Howmedica Osteonics, \$110,000, 6/1/03-5/30/04

Mechanical-Electrochemical Performance Testing of Vascular Stent Designs, GMP Cardiac Care, Inc., \$25,000, 8/03-12/03

Surface Engineering Passive Oxide Films for Biomaterials Applications, JL Gilbert, PI, Medtronic, Inc., \$114,500, 1/15/03 – 1/14/04

Surface Mechanical Imaging of Polyethylene Degradation, Depuy Orthopedics, JL Gilbert, PI, \$175,000, 5/1/00-4/30/02

Surface Engineering Passive Oxide Films for Biomaterials Applications, JL Gilbert, PI, Medtronic, Inc., \$89,500, 12/01/00 – 1/15/03

Two Solution Bone Cement Development, Summit Medical Limited, PI, JM Hasenwinkel, Co-PI JL Gilbert, \$115,250, 7/1/01-8/30/02

Acute and Healing Response to Two Solution Bone Cement Implantation, JL Gilbert, PI, Summit Medical Limited, \$176,323, 8/01/01 – 8/31/02

Mechanically Assisted Corrosion of Metal-on-Metal Articulations, Depuy Orthopedics Inc., JL

Gilbert, PI, \$69,000, 12/1/99-12/31/01

Micromechanical Testing of Tissues and Biomaterials, NIH/NIAMS AR-R21, JL Gilbert, PI, \$202,000 total costs, 10/1/97-8/30/00

Fretting Corrosion of Modular Total Hip Prostheses, Depuy, Inc. JL Gilbert, PI, \$69,000, 10/1/98-9/30/99

Graduate Training in Biomaterials, NIH, NIDR, EP Lautenschlager, PI, JL Gilbert, Co-I, preceptor for doctoral training in Biomaterials from 2/88 – 6/00 12 years, 6 students @ approx. \$220,000/yr

PATENTS AND INVENTION DISCLOSURES

1. Orthopedic Implant with Self-Reinforced Mantle, Patent # 5,507,814, Issued, April 16, 1996.
2. Methods of Making Self-Reinforced Compositions of Amorphous Thermoplastics, Patent #5,679,299, October 27, 1997.
3. Bone Cement and Method of Preparation, Patent # 5,902,839, May 11, 1999.
4. Method of preparing Biomedical Surface, Patent #8,012,338, September 6, 2011.
5. Multisolution Bone Cement and Methods of Making the Same, Patent #8,383,734, Feb, 26, 2013.
6. Multisolution Bone Cement and Methods of Making the Same, Patent #8,575,274, Nov 5, 2013.
7. System and Method for Controlling Bacterial Persister Cells with Weak Electric Currents, Patent #8,569,027, October 29, 2013.
8. System and Method for Controlling Bacterial Cells with Weak Electric Currents, Patent #8,663,914, March 4, 2014.
9. Method for Preparing Biomedical Surfaces, Patent #8,876,910, Nov. 4, 2014.
10. Electrochemical Coupling of Metallic Biomaterial Implants for Biological Effect, Patent # 9,039,764, 5/26/2015.
11. Multisolution Bone Cement and Methods of Making the Same, Continuation in part, Patent # 9,072,808, 7/15/2015.
12. Electrochemical Eradication of Microbes on Surfaces of Objects, Patent #9616142 B1, April 11, 2017.
13. Use of Lipids for Preventing Fretting Corrosion in the Modular Tapers of Orthopedic Implants, Patent #10,806,822, October, 2020.
14. A Method to Determine the Low Frequency Electrode Impedance Response from the High Frequency Impedance Only: Phase Symmetry Across Log Frequency, U.S. Serial No. 62/821,573, March 2019. Patent # 11,162,913
15. Electrochemical Eradication of Microbes on Surfaces of Objects, Patent # 11,458,216 B2, October 4, 2022.
16. Analyse von elektrochemischen Impedanzspektren unter Verwendung der Phasenwindelsymmetrie über dem Logarithmus der Frequenz, German Patent #11 2020 000 969, September 15, 2022.
17. Prevention of Fretting Crevice Corrosion of Modular Taper Interfaces in Orthopedic Implants with serial No. 61/72 2,459, filed on 11/5/12.
18. Smart Medical Devices for Electrochemical Monitoring and Control of Medical Implants, US Patent Application 14/774,761; US2016/0015320A1.
19. Diagnostic Method and Device for Assessing Human Joint Fluid Reactivity to CoCrMo Alloy, US Patent Application 15/100,651; US 2016/0299093A1
20. A micromechanical test method for adhesion testing of biomaterials and biological materials, Clemson University invention disclosure.
21. Electrochemical Eradication of Microbes on Surfaces of Objects, US 2019/0105414A1
22. Tin alloys as a Smart Metallic Biomaterial invention disclosure, 2022

CONSULTING ACTIVITIES

1. Expert witness in Dental Implant Case, 1990-1991
2. Expert witness in Dental Malpractice suit, 1992
3. Consultant to Greenmark, Inc., 1988-1992
4. Consultant to 3I Corporation, 1991
5. Consultant to Zimmer Corporation, 1993, 1995
6. Consultant to Oral-B Laboratories, 1993
7. Consultant to Medtronic Corporation, 1996-1998
8. Member of the Scientific Advisory Board for Osteonics Corporation, 1993 and 1995
9. Consultant to Osteonics, 1996
10. Consultant to Scimed Life Systems Inc., 1996-1998
11. Consultant to Howmedica, Inc., 1997-1998
12. Consultant to Smith and Nephew, Richards, Inc., 1997-1998
13. Kemp v Medtronic, Inc., Akron, Ohio product liability case 1998
14. Moore v Synthes, #494CV240 US District Court for the Eastern District of Texas, Sherman Division, product liability case 1998-1999
15. Consultant to Biomet, Inc., 2000
16. McDannel v Advanced Neuromodulation Systems, Inc., Louisiana Deposed and Testified in Court, 2000-2001
17. Finz and Finz, Consulting on Product Liability for Knee prosthesis
18. Biomet Inc., Consultant on Product Liability for Knee Prosthesis, expert witness, 2002
19. Biomet Inc., Consultant on Product Liability Case for Hip Prostheses, 2004, 2005
20. Biomet, 2005-2006
21. Biomet/EBI, Consultant on Product Liability Case for Hip Prostheses, 2009, 2010
22. Applied Spine Technologies, Inc, 2004
23. Biomed Solutions, LLC, 2004
24. Sofomar Danek, 2004
25. Stryker, 2006-2013 (Arthroplasty Advisory Board, Verification Advisory Board)
26. Depuy Orthopaedics, 2007- 2008
27. Stryker Orthopedics, Expert Consultant, 2007- 2008
28. Medtronic/Sofamar Danek, 2008 – 2016
29. Covidien, 2009-2011
30. Osseon Therapeutics, 2009-2011
31. Zimmer, Inc, 2009
32. Mackenzie LLP, Product Liability case involving failed Co-Cr hip stem, 2009
33. Edwards Life Sciences, 2010-2011
34. Depuy Orthopedics, Consultant on Product Liability, 2011-2019
- 35. Deposed in the Multi-District Litigation on DePuy Synthes Pinnacle Hip case, 2014**
36. Biomet – 2011 – 2015
37. T. Hall, Esq, Consultant on Product Liability, 2012
38. Stryker, Expert Consultant, 2012-present, Hip and Knee prosthesis product liability
- 39. Deposed in Sanders v Stryker Orthopedics case, 2016**
- 40. Zimmer Biomet, Expert Consultant, 2014-present, Multi-District Litigation, Hip Implant, Deposed, April 15, 2021.**
- 41. Deposed and testified in court in MacDonald V Zimmer Holdings, Albuquerque, NM, 2016**
- 42. Testified in Court Noto v Zimmer Holdings, Tampa, FL, July 2019**
43. Corin, Inc, 2015-2016
44. Bayer, Inc, 2016-2019
45. Omni Life Science, Inc. 2017 – 2019 (Product Liability)
46. DePuy Synthes, Inc., 2018-present
47. Woven Orthopedics, 2018
48. MiRus, 2018 – 2019
49. Pfizer, 2018-2019
50. TAV Medical, 2018

51. **Smith and Nephew, 2018-present, BHR Total Hip Multi-District Litigation consultant, deposed, July 2021.**
52. Ferlazzo LLP, Product liability consultant, 2018
53. Stryker, Orthopedic Bone Cement Product Liability Litigation, 2019
54. Zimmer Biomet, International Trade Litigation, 2019
55. DePuy Synthes Total Hip Fracture Product Liability, 2022-present
56. Bausch and Lomb, National Advertising Board dispute, 2021-present
57. Naples Community Hospital, Medical Malpractice case, 2022-present
58. Wall vs Stryker, Patent litigation, 2022-present. Latham & Watkins, **deposed, September 9, 2022.**
59. Omnilife Science product liability consultant, 2022.
60. Exactech, Inc., 2022-present.

PUBLICATIONS (Google Scholar: 11,400 citations, H-index: 54)
Original Scientific Peer Reviewed Papers

1. Piehler HR, Portnoff MA, Slotter LE, Vegdahl EJ, **Gilbert JL**, Weber MJ, "Corrosion-Fatigue Performance of Hip Nails: The Influence of Materials and Design", ASTM Special Technical Publication 859, A.C. Fraker, C.D. Griffin Eds., 1985: 93-104.
2. **Gilbert JL**, Piehler HR, "Grain Egression: A New Mechanism of Fatigue-Crack Initiation in Ti-6Al-4V", Met Trans A, September, 1989: 20-A; 1715-1725.
3. Massad M, LoCicero J, Matano J, Oba J, Greene R, **Gilbert JL**, Hartz R, "Endoscopic Thoracic Sympathectomy: Evaluation of Pulsatile Laser, Non-Pulsatile Laser, and Radiofrequency Generated Thermocoagulation", Lasers in Surgery and Medicine, 1991: 11; 18-25.
4. Buckley C, Lautenschlager EP, **Gilbert JL**, "Deformation Processing of PMMA into High-Strength Fibers", J. Applied Polymer Science. 1992: 44; 1321-1330.
5. **Gilbert JL**, Bloomfield R, Lautenschlager EP, Wixson RL, "A Computer Based Biomechanical Analysis of the Three Dimensional Motion of Cementless Hip Prostheses", J of Biomechanics, 1992: 25(4); 329-340.
6. Lautenschlager EP, Winkler MM, Monaghan P, **Gilbert JL**, "Normal Statistics or Not?", J Biomed Mat Res, 1992: 26(6); 829.
7. Boening K, **Gilbert JL**, Lautenschlager EP, "Lokale Corrosion-Ein In-vitro Modell", Deutsche Zahnärztliche Zeitschrift. 1992: 47; 295-298.
8. Parker A, Carrol C, Nuber GW, **Gilbert JL**, "The Effects of the Method of Loading and Radial Head Excision on Strain in the Medial Collateral Ligament of the Elbow", Proc Inst Med Chicago. 1992: 45; 38-44. 1991 Berkheiser Prize Winner for Orthopedic Research.
9. **Gilbert JL**, Stulberg B, "Fatigue Fracture of Titanium Alloy (Ti-6Al-4V) Knee Prostheses In-Vivo", ASM Handbook of Case Histories in Failure Analysis, ASM Int., Vol. 2, 1994.
10. Monaghan P, **Gilbert JL**, Prystowsky J, "A Performance Analysis of an Extracorporeal Shock Wave Lithotripter: Spatial Pressure Distribution and the Effects of Lithotripter Voltage, Electrode Life, and Tissue Attenuation", J of Stone Disease, 1992: 4(4); 289-300.
11. **Gilbert JL**, Dong DR, "A Numerical Time-frequency Transform Technique for the

- Determination of the Complex Modulus of Composite and Polymeric Biomaterials from Transient Time-Based Experiments", **Biomaterials' Mechanical Properties**, ASTM STP 1173, H.E. Kambic and A.T. Yokobori, Jr., Eds., American Society for Testing and Materials, Philadelphia, PA, 1994; 226-243.
12. **Gilbert JL**, Piehler HR, "On the Nature and Crystallographic Orientation of Subsurface Cracks in High Cycle Fatigue of Ti-6Al-4V", *Met Trans A*, 1993: 24A; 669-680.
 13. **Gilbert JL**, Smith SM, Lautenschlager EP, "Scanning Electrochemical Microscopy of Metallic Biomaterials: Reaction Rate and Ion Release Imaging Modes", *J Biomed Mat Res*, 1993: 27(11); 1357-1366.
 14. **Gilbert JL**, Buckley CA, Jacobs JJ, "In-Vivo Corrosion of Modular Hip Prosthesis Components in Mixed and Similar Metal Combinations: The Effect of Crevice, Stress, Motion and Alloy Coupling", *J Biomed Mater Res* 1993: 27(12); 1533-1544.
 15. **Gilbert JL**, Jacobs JJ, Buckley CA, Bertin KC, Zernich M, "Intergranular Corrosion Fatigue Failure of Co-Cr Femoral Stems: A Failure Analysis of Two Implants", *J Bone and Joint Surgery*, 1994: 76-A(1); 110-115.
 16. Shanbhag AS, Jacobs JJ, Glant TT, **Gilbert JL**, Black J, Galante JO, "Composition and Morphology of Wear Debris in Failed Uncemented Total Hip Replacement Arthroplasty", *Brit J Bone and Joint Surgery*, 1994: 76-B(1); 60-67.
 17. Cheng AC, Chai J, **Gilbert JL**, Jameson LM, "Investigation of Stiffness and Microstructure of Joints Soldered with Gas-Oxygen Torch and Infrared Methods", *J Prosthetic Dentistry*, 1994: 72(1); 8-15.
 18. **Gilbert JL**, Buckley CA, "Mechanical-Electrochemical Interactions During In-Vitro Fretting Corrosion Tests of Modular Taper Connections", *Total Hip Revision Surgery*, J.O. Galante A.G. Rosenberg, J.J. Callaghan, eds., Raven Press, New York, 1994; 41-50.
 19. Urban RM, Jacobs JJ, **Gilbert JL**, Galante JO, "Migration of Corrosion Products from Modular Hip Prostheses: Particle Microanalysis and Histopathological Findings", *J Bone and Joint Surgery*, 1994: 76-A(9); 1345-1359.
 20. Buckley CA, **Gilbert JL**, "The Mechanical-Electrochemical Interactions of Passivating Alloys Used in Medicine", *Compatibility of Biomedical Implants*, Ed. P Kovacs, N Istephanous, Proceedings of the Electrochemical Society, 1994: 94-15; 319-330.
 21. Smith SM, **Gilbert JL**, "Scanning Electrochemical Microscopy of Co-Cr-Mo Microstructures: Imaging and Current-Potential Response", *Compatibility of Biomedical Implants*, Ed. P Kovacs, N Istephanous, Proceedings of the Electrochemical Society. 1994: 94-15; 229-240.
 22. Mueller WD, **Gilbert JL**, "TEA-CO₂ Laser Effects on Ti Surface", *Compatibility of Biomedical Implants*, Ed. P Kovacs, N Istephanous, Proceedings of the Electrochemical Society. 1994: 94-15; 155-166.
 23. **Gilbert JL**, Covey D, Lautenschlager EP, "Bond Characteristics of Porcelain Fused to Milled Titanium", *Dental Materials*, 1994: 10;134-140.
 24. King AW, Chai J, Lautenschlager EP, **Gilbert JL**, "Mechanical Properties of Milled and Cast Titanium for Ceramic Veneering", *The Int J of Prosthodontics*, 1994: 7(6); 532-537.

25. Leong D, Chai J, Lautenschlager EP, **Gilbert JL**, "Marginal Fit of Machined Milled Titanium and Cast Titanium Single Crowns", *The Int J of Prosthodontics*, 1994: 7(5); 440-447.
26. King AK, Lautenschlager EP, Chai J, **Gilbert JL**, "A Comparison of the Hardness of Different Types of Titanium and Conventional Metal Ceramics", *J Pros Dent*, 1994: 72; 314-319.
27. Muller WD, Seliger K, Meyer J, **Gilbert JL**, "The Improvement of Adhesion of Polymer on Titanium Surface After Treatment with TEA-CO₂ Laser Irradiation", *J Materials Science, Mat Med*, 1994: 5; 692-694.
28. Meyer J, Muller WD, Seliger K, **Gilbert JL**, "Bearbeitung von Ti-Oberflächen mit dem TEA-CO₂ Laser kosmetischer oder funktioneller Effekt", *Rostocker Medizinische Beiträge, Heft 4*, 1994, S. 49-57.
29. Murray DG, Renee RS, Dickerson K, "Total Hip Replacement", *JAMA*, 1995;273(24):1950-1956.
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16. **Gilbert JL**, *Metals in the Body*, **Biomaterials Science: An Introduction to Materials in Medicine**, 4th Edition, 2020
17. **Gilbert JL**, *Degradation of Metals in the Body*, **Biomaterials Science: An Introduction to Materials in Medicine**, 4th Edition, 2020.
18. **Gilbert JL**, "Tribocorrosion", **ASTM's MNL20: Corrosion Tests and Standards: Application and Interpretation – 3rd Edition**, JR Scully Ed., ASTM International, West Conshohockin, PA, in press, February, 2022.

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1. **Gilbert JL, Metallic Biomaterials: Science and Engineering**, J Wiley and Sons, Completion date: June 2014.
2. **Gilbert JL, Zhu D, "One-Dimensional Newtonian Analysis of the Seating Impaction Mechanics of Modular Tapers in Total Hip Implants: Head Size, Taper Mechanics and Substrate Effects"**, in preparation, May 2021

MASTERS THESES DIRECTED:

Northwestern University

1. R.S. Bloomfeld, **An Invitro Assessment of the Acute Stability of Uncemented Femoral Components in Total Hip Arthroplasty**, 1990.
2. C.A. Buckley, **The Extrusion and Drawing of Poly(Methyl Methacrylate) Fibers for Incorporation into a Self-Reinforced Composite**, 1990.
3. P. Monaghan, **A Performance Analysis of the Dorneir MPL 9000 Extracorporaeal Shock Wave Lithotripter**, 1992.
4. D. Ney, **Self-Reinforced Poly(methyl methacrylate) Fiber Composites: Evaluation of Optimal Processing Techniques and Mechanical Properties**, 1993.
5. R. Douglass Wills, **Biomechanical Analysis of the Three Dimensional Relative Motion of Total Knee Prostheses: The Effect of Loading and Stem Length**. June 1995.
6. John Goode, **Ultrahigh Molecular Weight Polyethylene Self-Reinforced Composite Wear Behavior**, 1996
7. D. Wright, **Processing-Structure-Property Characterization of Self-Reinforced Composite Poly(Methyl Methacrylate): Unidirectional and Woven Composites**, January 8, 1996.
8. M. Hutten, **Fretting Corrosion of Dental Implants**, May 1996 (in Prothodontics).
9. P. Mui, Terminal Masters in Biomedical Engineering, **Tensile properties of PMMA fibers**, 1996.
10. L. Zarkas, **Oxygen Concentration Profiles Near Polarized Titanium Surfaces**, May 1997 (in Prosthodontics).
11. G. Borges, **Wear Comparison Between Enamel and a Porcelain Restorative Material**, May 1997.
12. D Covey, **Bonding Characteristics of Porcelain Fused to Titanium**, June 1997.
13. S. Goldberg, **Electrochemical Scratch Testing of Ti-6Al-4V: Effect of Area Ratio and Development of Transient Electric Fields**, May 1999.

Masters Students (M.S.'s) Directed at Syracuse University (Project Titles)

1. Casey Rosenthal, **Electrochemical Atomic Force Microscopy of Platinum Surfaces**, 2002.

2. Jeffery Cumber, **Microindentation Behavior of Ultra High Molecular Weight Polyethylene**, 2002.
3. Aaron Butterfield, **Nanoindentation and AFM characterization of UHMWPE**, 2002.
4. Stacey Ann Collins, **Fretting Crevice Corrosion of Modular Acetabular Metal-on-Metal Components**, 2003.

Masters Students (M.S.'s) Directed at Syracuse University (Theses Titles)

5. Jae-Bum Shim, **Characterization of the Polymerization of a Two-Solution Bone Cement: Shelf-Life and Dynamic Mechanical Analysis**, April, 2004.
6. J Wernle, **Surface Mechanics of Ultra High Molecular Weight Polyethylene**, May 2004.
7. R, Gettens, **Quantification of Fibrinogen Adsorption Using Atomic Force Microscopy: Kinetics, Isotherm and Assembly**, June 2004.
8. Manav Mehta, **Mechanically Assisted Corrosion of Vasular Stents and Stainless Steel Modular Hip Prostheses**, 2005.
9. Jennifer Kang, **The Micromechanical and Chemical Effects of Bone Cement Polymerization on Sheep Femur Cortical Bone**, 2005.
10. Matt Lyaski, **Molecular Springs-Based Modeling of Bone Cement Polymerization and Porosity Induction**, December 22, 2006.
11. Viswanathan Swaminathan, **Electrochemical Characterization of Novel Coatings for Total Joint Replacement Wear Surfaces**, April 2007.
12. Danieli Rodrigues, **Severe Corrosion and Hydrogen Embrittlement in Ti-Alloy/Ti-Alloy Modular Body Stem Hip Prostheses In Vivo**, August, 2007.
13. Shereen Kaul, **Cell Response to Mg-Ti Couples** , December 22, 2008.
14. Nikhil Jawrani, **Fibrinogen Adsorption to Titanium Surfaces**, April 2010.
15. Dipika Shetty, **The Influence of Microparticles of Mg, Ti, and Mechanically Alloyed (50/50) MgTi on Mammalian Cell (MC3T3-E1) Viability**, December 2011
16. Steve Chiu, December 2012
17. Dan Whitney, **Titanium Oxide Patterning**, June 2012
18. Seth Del Prato, **Atomic Force Microscopy of Contact Lenses**, 2012
19. Jin Guo – **Interactions of bacterial biofilms with electrochemically active titanium surfaces undergoing reduction**, August 2013
20. Tiantian Hui, **How voltage and wear debris from Ti-6Al-4V interaction to affect cell viability during *in vitro* fretting corrosion**, April 2014
21. Aarti Shenoy, **The effect of roughness on the fretting corrosion behavior of 316L**

Stainless Steel surfaces, December 2015.

22. Huiyu Shi, **The Combined Effect of CoCrMo and H₂O₂ on the Viability of U937 Macrophage-like Cells In Vitro**, April 2016
23. Zhe Li, **Fretting Corrosion Modeling of Potential Shifts Using Heredity Integrals: Effect of Frequency on Response**, April 2016
24. Dongkai Zhu, **An Abrasion-Current-Voltage Model of Tribocorrosion using Impedance, Faraday's Law and Duhamel Integrals**, April 2016
25. Sile Hu, **Microelectrochemical Measurements of Corrosion Heterogeneity in Medical Alloys**, December 2016
26. Jianan Lin, **Analysis of Modular Taper Corrosion Damage Using Micro-Electrochemical Methods**, December 2016
27. Aldo Moreno-Reyes, 2022 (MEng), Clemson University
28. Kazzandra Alaniz, 2023 (MEng, Clemson University

PH.D. THESES DIRECTED:

1. Dei-Re. Dong, **Transformation of Time-Based Stress Relaxation Data into Frequency Based Moduli**, 1992. Professor in Taiwan
2. Samuel M. Smith, **Scanning Electrochemical Microscopy of Metallic Biological Materials**, 1993. Private Dental Practice
3. Christine A. Buckley, **Mechanical-Electrochemical Interactions in the Taper of Modular Hip Prostheses**, Oct. 1994. Professor of Biomedical Engineering at Rose Hulman
4. Peter Monaghan, **Electrochemical Evaluation of Corrosion of Dental Amalgam Through Dentin**, October, 1996. Private Dental Practice
5. Jay R. Goldberg, **Mechanically Assisted Crevice Corrosion of Modular Hip Implants: Effects of Material and Surface Modification**, October 1998. Professor of Biomedical Engineering at Marquette University
6. Debra. D. Wright, **The Effect of Processing and Molecular Weight on the properties of PMMA Fibers and Self-Reinforced Composites**, Oct. 25, 1999. Professor at Michigan Technological Institute
7. Julie M. Hasenwinkel, **A Novel Two Solution PMMA-Based Bone Cement: The Effect of Chemistry on Polymerization and Properties**, Nov. 10 1999. Professor at Syracuse University
8. Spiro Megremis, **The Role of Mechanically Assisted Corrosion on the Behavior of Co-Cr-Mo Alloys Used in Metal-on-Metal Total Hip Prostheses**, July 18, 2001. Director of Research and Standards Development, American Dental Association
9. Jane Bearinger, **The Electrochemistry of Titanium/Titanium Oxide in the Biological Environment**, August 1, 2000. Principal Scientist Lawrence Livermore National

Laboratories

10. Joseph Kunnel, (Co-advised with Paula H. Stern) **The Effect of Micromechanical Loading on the Biological Response of Viable Explanted Neonatal Mouse Long Bones**, September 12, 2001. Professor of Dentistry at University of Illinois at Chicago
11. Jaebum Shim, **Complexity in Non-Isothermal Polymerization of PMMA Based Bone Cement: Thermal, chemical and mechanical effects on polymerization fronts**, March 26, 2007. Director of Research at Korean Medical Device Company
12. James Wernle, **Nanomechanics of Wear in UHMWPE**, July 2008, Post-Doctoral Fellow, Upstate Medical University
13. Robert Gettens, **Protein Adsorption onto Medical Alloys: Voltage Effects**, June 2007, Professor of Biomedical Engineering, Western New England College
14. Mark Ehrensberger, **The In-vitro Biological and Electrochemical Interactions of Electrically Polarized Commercially Pure Titanium Used for Orthopedic and Dental Applications**, March 20, 2008, Director of Research, Department of Orthopedics at SUNY at Buffalo, March, 2008
15. Morteza Haeri, **Voltage Effects on Cells Cultured on Metallic Biomedical Implants**, September 17, 2012, Post-doc U Conn.
16. Viswanathan Swaminathan, **Fundamental Studies of Fretting Corrosion of Orthopedic Implant Alloys**, 2012, Principle Scientist, Stryker Orthopedics
17. Shiril Sivan, **Electrochemical Aspects of Metallic Biocompatibility**, February 23, 2014, Post Doc, FDA
18. Sachin Mali, **Mechanically Assisted Corrosion Performance of Metallic Biomaterials: Implant Retrieval, Material Analyses and Device Testing**, January 28, 2014, Senior Scientist, Medtronic, Inc.
19. Eric Oullette, **Novel Methods and Self-Reinforced Composite Materials for Assessment and Prevention of Fretting Corrosion in Modular Tapers**, March 27, 2016
20. Yangping Liu, **The Effects of Simulated Inflammatory Conditions on the Corrosion and Fretting Corrosion of CoCrMo Alloy**, December 5, 2016
21. Jua Kim, **Cytotoxicity of Galvanically Coupled Magnesium and Titanium Microparticles for Therapeutic Effect**, December 15, 2016
22. David Pierre, **Design, Material and Surgical Assembly Effects on Fretting Corrosion Behavior of Modular Tapers in Orthopedic Implants**, January 3, 2017
23. Greg Kubacki, **Simulated Inflammation by Hypochlorous Acid and the Corrosion and Tribocorrosion of Orthopaedic Alloys: Feedback between Corrosion and Inflammation**, January 30, 2018
24. Michael Wiegand, **Inflammation and Corrosion: Reactive Oxygen Species and CoCrMo Alloy Interactions**, August 19, 2019.
25. Stephanie Smith. **Compliance, Hardness and Fretting Corrosion in Modular Taper**

Junctions: The Micromechanics of Contact, March 23, 2020

26. Aarti Shenoy, **Understanding Corrosion in Modular Acetabular Tapers: Retrieval Analysis, In Vitro Testing and Cell-Material Interactions**, November 20, 2020
27. Dongkai Zhu, **The Fundamentals of Fretting Crevice Corrosion of Metallic Biomaterials for Orthopedic Implants**”, February 26, 2021
28. Annsley Mace, **Single Asperity Fretting Corrosion of Traditional and Additively Manufactured Metallic Biomaterials: Quantitative Analysis from Acetabular Tapers to Micron and Nanometer Scale Tribocorrosion**, April 4, 2022
29. Can Aslan, 2023
30. Michael Kurtz, 2023
31. Charlie Goodwin, 2024
32. Hwaran Lee, 2024
33. William Nelson, 2025
34. Peter Kurtz, 2025
35. Mohsen Kardenas, 2026
36. Larry Liu, 2026

POST-DOCTORAL STUDENTS

1. Steven Duray, 1995-1996
2. Guigen Zhang 1996-1998
3. Zhijun Bai 2002-2005
4. David Pierre, 2017-2018
5. Piyush Kuhlur, 2018-2020
6. Michael Wiegand, 2019-2020
7. Yangping Liu, 2018 – 2022

UNDERGRADUATE THESES/SUMMER INTERN

- | | |
|--|---|
| Rachelle Prantil 2000 | Casey Rosenthal, 2000 |
| Mike Whitaker, 2000 | Jeff Cumber, 2000 |
| Aaron Butterfield, 2000 | Micah Young, 2001 |
| Stacey Ann Collins, 2001 | Pharoah Garma, 2002 |
| Stacey Warner, 2003 | Emma Tzoumis, 2004 |
| Evangeleah Bellas, 2004 | Tim Eller, 2004 |
| Sioshul Anum, 2004 | Fadi Abusseleh, 2005 |
| Alison Forsyth, 2006, University Scholar | Kristin Wunsch, 2006 |
| Alexander Hild, 2006 | Brian Lam, 2006 |
| Steve Kaufman, 2006 | Jacob Mezey, 2008 |
| Mohammad Zagnoon, 2009 | Jua Kim, 2009 |
| Eric Ouellette, 2010 | Andrew Ferrel, 2011 |
| Steve Chiu, 2011 | Alexander Weiss, 2012, University Scholar nominee |
| Amber Schwietzer, 2011-2013 | Kenny Nam, 2011-2013 |
| Brian Anderson, 2013 | Jong In Kim, 2013 |

Kevin McCandless, 2014
John Werbitski, 2015
Tanner Giamichelle, 2015
Sara LittleJohn, 2018
Maria Camargo, 2021
Arron Spearman, 2022

Erica Delisle, 2015
Taylor Doyle, 2014
Kathleen Pieri, 2016
Audrey Wessinger, 2021, 2022
Cassidy Bouknight, 2021
Reagan Hamm, 2022

INVITED LECTURES

1. "Computer Based Techniques of Acquisition, Analysis and Animation of Biomaterials and Biomechanical Tests", presented to the local chapter of the IADR, Sept. 1990.
2. "New Methods of Corrosion Analysis for Medical and Dental Materials", lecture presented at the Free University of Berlin, April 27, 1992.
3. "The Corrosion of Modular Hip Prostheses In-Vivo", presented at the Zimmer Corporation, May 26, 1992.
4. "Corrosion and Corrosion Fatigue of Modular Hip Prostheses", Invited seminar presented at Howmedica Corporation, August 28, 1992.
5. "New Techniques to Evaluate Biomechanical Properties of Polymers", Northwestern University, Oral Biology Seminar, Oct. 15, 1992.
6. ASTM Workshop on Modularity of Orthopedic Implants, presented November 18, 1992, Miami Florida.
7. "Corrosion Analysis of Modular Orthopedic Implant Materials", Depuy Inc., Nov. 2, 1992.
8. "Bonding Characteristics of Porcelain to Titanium", FDI Noble Pharma Symposium, Gottenberg, Sweden, August 31, 1993.
9. "Mechanical-Electrochemical Interactions During In-Vitro Testing of Modular Taper Connections", Bristol Meyers Squibb/Zimmer Orthopaedic Research Symposium, Chicago, Illinois, November 19-21, 1993.
10. "Oxide Fracture and Repassivation in Medical Alloys", Osteonics, Sept. 1994.
11. "Degradation in Modular Femoral Hip Prosthesis Tapers", National Institutes of Health Consensus Development Conference on Total Hip Prostheses, September 12-14, 1994, Bethesda MD.
12. E.P. Lautenschlager, "Corrosion and Fretting Corrosion of Alloys Used in Pacemaker Leads", Medtronic Corp., September, 1994.
13. "Self-Reinforced Composite Poly(Methyl Methacrylate): Structure and Properties", Argonne National Laboratories, April 18, 1995.
14. "Scanning Probe Microscopies", Workshop on Digital Imaging and Laser Applications in Microscopy, Northwestern University, June 30, 1995.
15. "Fundamentals of Tribology in Biomaterials", Osteonics Scientific Advisory Board Meeting, Nantucket, MA, June 23, 1995.

16. "Beta-Titanium Alloys for Orthopedic Applications", Osteonics Scientific Advisory Board, Nantucket, MA, June 24, 1995.
17. "Alternate Sources of Particulate Debris in Total Hip Replacements", Osteonics Scientific Advisory Board, Nantucket, MA, June 24, 1995.
18. "Imaging and Analysis of Electrochemical Processes on Biomaterials Surfaces Using Scanning Electrochemical Microscopy", Keynote Speaker for The Surfaces in Biomaterials Meeting, Minneapolis MN, September 9, 1995.
19. Self-Reinforced Composite Poly(Methyl Methacrylate) for use in Orthopedic Implants", November 11, 1995, Zimmer, Inc., Warsaw IN.
20. Self-Reinforced Composite Biomaterials of PMMA and PE, Carnegie Mellon University, September 9, 1996.
21. "Self-Reinforced Composite Biomaterials: Present Capabilities and Future Possibilities", 23rd Annual Eugene Skinner Memorial Lecture, Northwestern University Dental School, October, 1996.
22. "Self-Reinforced Composite Poly(Methyl Methacrylate)", International Association for Dental Research, Lunch and Learning Program, Orlando, FL, March 20, 1997.
23. "Self-Reinforced Composite Poly(methyl methacrylate) for Orthopedic Applications", Austrian, Swiss, German Traveling Fellowship Program, February 28, 1997.
24. "Mechanical-Electrochemical Behavior of MP35N", Medtronic, Inc., Brooklyn Center, MN, June 30, 1997.
25. "Novel Electrochemical Techniques for Analysis of Metallic Biomaterial Surfaces", Medical Design and Manufacturing Conference, Minneapolis, MN November 4-6, 1997.
26. "Self-Reinforced Composite PMMA for use in Medicine", Department of Chemical, Bio and Materials Engineering, Arizona State University, March, 1998.
27. "Mechanically Assisted Corrosion of Modular Tapers", Department of Bioengineering and Neuroscience, Syracuse University April, 1998.
28. "Self-Reinforced Composite Biomaterials: Or How to Take a Weak Plastic and Make it a High Strength Material", Department of Bioengineering and Neuroscience, Syracuse University April, 1998.
29. "The Electrochemical Consequences of Mechanical Loading in Metallic Biomaterials", ASM Chicago Chapter Meeting, June 9, 1998.
30. "Self-Reinforced Composite Materials for Orthopedics", 1998 Orthopaedic Association ABC Traveling Fellows, May 26, 1998.
31. "Tribo-electrochemical Behavior of Passivating Metallic Biomaterials", Argonne National Laboratories, December 8, 1998.

32. "Orthopedic Bone Cement: Recent Innovations and Observations", Department of Chemical Engineering and Materials Science, Syracuse University, March 12 1999.
33. Cornell Bioengineering Research Seminar, November 11, 1999.
34. Department of Physics, Syracuse University, November 18, 1999.
35. "Electrochemical Consequences of Mechanical Factors on the Corrosion of Metallic Implant Materials", Guidant, Inc., July 17, 2000.
36. "Electrochemistry of Biomaterials Surfaces in the Presence of Mechanical Loading", Gordon Conference on Aqueous Corrosion, presented July 2000.
37. "Triboelectrochemistry of Metallic Biomaterials", Department of Materials Engineering, Drexel University, August 14, 2000.
38. "Engineering Oxides for Medical Applications", Medtronic Inc. September 8, 2000.
39. "Electrochemical Atomic Force Microscopy of Medical Alloy Surfaces: The effect of surface potential on surface forces and frictional imaging". Medtronic, October, 2001.
40. "Two Solution Bone Cement", Summit Medical Ltd., November 8, 2001, Bourton-on-Water, UK
41. "Orthopedic Biomaterials at Syracuse University". November 28, 2001, Depuy Orthopedics, Inc. Warsaw, IN.
42. "Time Dependent Properties of Biomaterials: Theory, Analysis and Experiments", Keynote Address, Society for Biomaterials Annual Meeting, Symposium on Time and Temperature Dependent Behavior of Biomaterials, Tampa, FL April 23, 2002.
43. "The Future of Biomaterials: There is STILL Plenty of Room at the Bottom", 25th Northeast Bioengineering Conference, Drexel University, Philadelphia, PA. April 21, 2002.
44. "Advances in Orthopedic Bone Cement: Two-Solution Acrylic Bone Cement", American Chemical Society Meeting, Special Symposium on Orthopedic Materials, Boston, August, 2002.
45. "Surface Engineering of Metal Oxides for Biomaterials Applications", Medtronic, Inc., August 2002.
46. "Things You Didn't Know About Orthopedic Biomaterials", Department of Orthopedics, University of Utah, March 17, 2003.
47. "The Dynamics of Oxide Films on Metallic Biomaterials", ASM Meeting on Medical Devices, Anaheim, CA, Sept 10, 2003
48. The Dynamics of Surfaces of Metallic Biomaterials: AFM studies of oxides and protein adsorption, Columbia University, New York, Nov. 14, 2003.
49. Protein-Surface Dynamics Investigation Using Atomic Force Microscopy, Medtronic, Jan, 2004.

50. "Bioengineering – The Next Frontier of Innovation", Syracuse University "E-month" Program Seminar, Feb 17, 2004.
51. Workshop on "Metals in Orthopedics", 50th Annual Meeting of the Orthopedic Research Society, Organizing Chair and presenter, San Francisco, March 2004.
52. "Biomaterials at Syracuse University", Invited presentation to Board of Trustee Spouses at Syracuse University, May 10, 2004.
53. "The Micromechanics of Wear of UHMWPE", Depuy Orthopedics, Inc., May 24, 2005.
54. "The Electrified Biomaterials Interface", Southwest Research Institute, University of Texas San Antonio, June 13, 2005.
55. Keynote Address: "The Corrosion Behavior of Medical Alloys", ASM International Conference on Medical Devices, Boston, November 14, 2005.
56. Keynote Address: "Electrochemical Control of Biomedical Alloy Surfaces", Smart Materials in Engineering and Biology, and Intelligent Artifacts in Biology, SMEBA/INABIO Conference Daejong Korea, September, 22, 2006.
57. "The Electrified Biomaterials Interface" Downstate Medical University, Department of Orthopedic Surgery/ Biomedical Engineering Department Seminar, Nov. 2006.
58. "Electrochemical Control of Orthopedic Implant Surfaces", Depuy Orthopedics, July, 2007.
59. "Corrosion Behavior in Hip Resurfacing", 1st Annual Hip Resurfacing Course, Annapolis, MD, October, 2007.
60. "Electrochemistry at the Metallic Biomaterials Interface: Faradaic Reactions and Their Effect on Surface Oxide Dynamics, Protein Adsorption and Cell-Surface Interactions", Biointerfaces 2007, Surfaces in Biomaterials Foundation Annual Meeting, San Mateo, CA, October, 29, 2007.
61. "Electrochemistry of Medical Alloys In-Vivo", Presentation to Workshop on Embedded Metal Fragments, May 14, 2008, Army Medical Command, Aberdeen Proving Ground, MD.
62. "A Future History of Orthopedic Implants", ASM International's Materials and Processes for Medical Devices meeting, Cleveland, OH, Aug 6-8, 2008.
63. "Electrochemical Effects in Hip Resurfacing", 2nd Annual Hip Resurfacing Course, Los Angeles, October 23-24, 2008.
64. "Electrochemistry of metallic biomaterial surfaces in the presence of mechanical loads", Medtronic Memphis, presented, June 2009.
65. "Current Concepts in Corrosion of Metallic Biomaterials", Covidien, Inc., presented, May, 2009.
66. "Corrosion: Oxidation AND Reduction at Cobalt Chromium Surfaces in the Biological

Milieu – Potential Consequences for Hip Resurfacing”, 2009 Annual Hip Resurfacing Course, Baltimore, MD, October, 2009.

67. “Titanium is NOT “the most biocompatible metal” under cathodic potential”, Biointerfaces, 2009, Meeting of the Surfaces in Biomaterials Foundation, San Mateo, CA, Oct. 26-28, 2009.
68. Keynote Address at the 2010 NACE Symposium on Corrosion of Biomaterials, March 15th 2010, “Corrosion of Metallic Biomaterials and the Biological Context”.
69. Plenary Speaker, Northeast Bioengineering Conference and Biomaterials Day, Columbia University, New York, NY, March 27, 2010.
70. “The Mechanisms Associated with Fretting Crevice Corrosion of Implant Junctions”, Medtronic, Memphis, TN, April 13, 2010.
71. Page Morton Hunter Distinguished Lecturer, Clemson University, February 8, 2011.
72. Distinguished Lecturer, Texas A&M University, March 7, 2011.
73. Special Lecture, University of Connecticut, March 21, 2011.
74. Keynote Address: 220th Meeting of the Electrochemical Society, “Tribocorrosion of Metallic Biomaterials”, Boston, MA, October 10, 2011.
75. Keynote Address: ESAO/IFAO Meeting, “Biological Response to Electrochemical Stimuli: A role for reduction reactions and galvanism in cellular behavior” in Porto Portugal, October 11, 2011.
76. “Degradation of Metallic Biomaterials in Orthopedic Applications”, University of Porto, Porto Portugal, October 13, 2011.
77. Plenary Speaker, 49th Indian Institute of Metals Meeting, “Cells and Surface Electrochemistry of Metallic Biomaterials”, Hyderabad India, November 15, 2011.
78. “Fretting Crevice Corrosion in Orthopedic Implant Designs”, Indian Institute of Science, Bangalore, India, November 13, 2011.
79. FDA Orthopedic Devices Panel Meeting Speaker, June 26-27, 2012, Metal-on-Metal Corrosion.
80. “The Strange and Wonderful World of Metallic Biomaterials Corrosion: Nature Finds a Way”, Invited Lecture, Aqueous Corrosion Gordon Conference, presented July 8, 2012.
81. “Fretting Crevice Corrosion: What we know and what we don’t know”, Invited Lecture, Tribology Gordon Research Conference, presented July 12, 2012.
82. “How Metallic Biomaterials Corrode: Mechanically Assisted Corrosion in Biological Systems”, Food and Drug Administration, October 17, 2012.
83. “Corrosion of Orthopedic Implants: How and why it happens”, AAOS Hip Society, March 23, 2013, Chicago, IL.

84. Keynote: "Fretting Corrosion of Metallic Medical Devices: Effects of Alloys, Impedance and Area on Voltage-Current Relationships", Research-in-Progress: Biomaterials, NACE annual meeting, Orlando, FL, March 19, 2013.
85. Keynote: "Bio-mechano-electro-chemical interactions in metallic biomaterials surfaces", Design of Medical Devices Conference, Minneapolis, MN, April 9th, 2013.
86. Keynote: "Metal-Metal oxide thin film- biological interfaces and the role of bio-mechano-electro-chemical processes", The International Conference on Metallurgical Coatings and Thin Films (ICMCTF), to be presented, April 29-May 3, 2013 San Diego, CA.
87. "When Hip Implants Corrode", Syracuse Biotechnology Conference, May 16, 17, 2013.
88. Tribocorrosion in Joint Replacements: It's not just about the wear, Depuy Orthopedics, Jun 16, 2013
89. Mechanically Assisted Corrosion Research, Stryker Orthopedics, Mahwah, NJ, July 26, 2013
90. Keynote: Control of Biological-Metallic Biomaterial Interfaces by Electrochemical Means, 8th Pacific Rim International Conference on Advanced Materials and Processing, Waikaloa Village, HI, August 5-9, 2013.
91. Keynote: Tribocorrosion of Modular Tapers, ASTM Workshop on Implant Modularity and Corrosion, Jacksonville, FL, Nov, 2013.
92. Orthopedic Research Society Workshop "Bio-Tribocorrosion: Fundamentals and Advances in Orthopaedics", Invited Speaker, ORS Annual Meeting, March 15-18, 2014, New Orleans.
93. AAOS/ORS Scientific Exhibit, "The taper connection as the source of corrosion and bad humors", March 12-18, 2014, New Orleans.
94. Invited Speaker, University of Virginia, Department of Materials Science, March 31, 2014
95. Keynote: "Tribocorrosion in Orthopedics", 4th International Conference on Tribocorrosion, April 9-11, 2014 Glasgow UK.
96. Keynote: 2nd International Conference on BioTribology, Toronto, CA May 11-14, 2014.
97. Invited Lecture: "The Body and the Metal Implant: Complexity and Emergent Behavior", SVC Techcon, Chicago, May 3-6, 2014.
98. Keynote: "Adverse Local Tissue Reactions *Cause* Corrosion of CoCrMo Orthopedic Implants: The causal arrow goes both ways", British Orthop Res Soc, Bath, UK, June 23, 24, 2014.
99. "Fretting Corrosion Testing of Modular Head-Beck Tapers", DePuy Synthes, September 18, 2015

100. Invited Lecture: "State-of-the-art Understanding of Modular Taper Corrosion" ASTM Symposium on Modular Taper Junctions, New Orleans, Nov. 11, 2014.
101. Stryker Corrosion Research Meeting, Nov 15, 2014.
102. University of Virginia, Center for Environmental Science and Engineering, "Metals in the Body", November 25, 2014
103. University of Virginia, Center for Environmental Science and Engineering, "Voltage-Current-Impedance-Mechanics Relationships During Tribocorrosion", December 19, 2014.
104. University of Leeds, Tribocorrosion Research Program, "Biotribocorrosion: Voltage-Current-Impedance-Solution-Mechanics Relationships", March 3, 2015.
105. University of Leeds, Leeds Medical and Biological Research Unit Novel Biological Observations in Modular Implant (Tribo)Corrosion, or "**A**"LTR CAUSES CORROSION", March 19, 2015.
106. ORS/Hip Society Workshop on Biological Aspects of Modular Implant Tribocorrosion, "Novel Biological Observations in Modular Implant Tribocorrosion", March 28, 2015.
107. University of Leeds, Institute of Medical and Biological Engineering, "Recent Advances in Understanding Modular Taper Corrosion In Vitro and In Vivo", May 15, 2015
108. University of Leeds, Joint Replacement and Substitution Center, "Bio-Corrosion of Modular Taper Interfaces: Retrievals and Experiments", May 21, 2015
109. University College London and Royal National Orthopaedic Hospital, Stanmore, UK, "Recent Advances in Understanding Modular Taper Corrosion In Vitro and In Vivo", June 8, 2015
110. University of Southampton, Southampton, UK, National Centre for Advanced Tribology at Southampton, "Recent Advances in Understanding Modular Taper Corrosion In Vitro
111. University of Bath, Department of Mechanical Engineering, Bath, UK, "Recent Advances in Understanding Modular Taper Corrosion In Vitro and In Vivo", June 12, 2015
112. Hamburg University of Technology, Institute of Biomechanics, Minisymposium "Corrosion", "The Role of Inflammation on Corrosion of Metallic Biomaterials", June 29, 2015.
113. Bristol Hip Course, Bristol, UK, September 30, 2015, two lectures.
114. ASTM Workshop on Implant Retrieval, "Metallic implant retrieval analysis methods: Imaging to understand mechanisms", Tampa FL, November 18, 2015.
115. **Stevenson Lecture**, Metals and the Body, Syracuse University, March 4, 2016.
116. Tribocorrosion of Orthopedic Implants: Mechanisms and Consequences, Department of Mechanical and Aerospace Engineering, Syracuse, University, April 1, 2016

117. University of Minnesota, Department of Materials Science and Engineering, Symposium on Hard Biomaterials, June 1, 2016.
118. Clemson University, June 10, 2016.
119. 2017 ORS Workshop: Taper Corrosion in THA: Clinical Impact and Applying the Best Evidence into Practice, *Do Taper Materials and Designs Matter?*, 2017 ORS meeting, San Diego, CA, 2017.
120. Society of Vacuum Coaters, April, Providence, RI, April 29 – May 4, 2017
121. Orthopedic Grand Rounds, Hospital for Special Surgery, “Can we Talk Tapers”, May 17, 2018
122. Hospital for Special Surgery, Bioengineering Division Lecture: “Can We Talk Engineering of Tapers?”, May 17, 2018.
123. Exponent, Inc., Philadelphia, PA, July 12, 2018, “Inflammatory Cell Induced Corrosion: Current concepts in the link between biology and corrosion of metallic biomaterials”
124. Presidential Lecture, “Corrosion, Mechanics, Biology and Tapers in Total Hip Replacements,” The Hip Society, Las Vegas, March 16, 2019.
125. NACE Keynote Address to BioMaterials Symposium, “Electrochemical Analysis of Metallic Biomaterials.” Nashville, TN, March 26, 2019.
126. Society For Biomaterials Highlight Talk, “SMART Implants: Metallic Biomaterials Surfaces and Electrochemistry”
127. Society of Tribologists and Lubrication Engineers, Keynote Address of Biotribology Symposium, “Tribocorrosion of Metallic Biomaterials”, Nashville, TN, May 22, 2019.
128. Keynote Address, Chinese Society for Biomaterials Congress, Dailan, China, August, 2019.
129. Invited Talk, Orthop Res Society. Debate: Corrosion and Inflammation, Feb 16, 2020
130. Food and Drug Administration December 2, 2020: “Corrosion and Tribocorrosion in the Human Body: Basic Concepts, retrieval analysis and laboratory investigations” 2021
131. Invited Lecture, Ortho Res Soc, 2021, Long Beach, CA, “Antibacterial Electrochemistry at Metallic Biomaterials: Implant Generated Therapeutics”, Feb 16, 2021.
132. Invited Lecture, Soc. For Biomaterials, Chicago, April 21-24, 2021. “Things You Never Learned About Corrosion and Tribocorrosion of Metallic Biomaterials”
133. Two-Day NACE Technical Educational Series, “Corrosion Impacts in Biomedical Devices: Metallic Materials in the Human Body.”, June 14,15, 2021. Organizer and presenter.

134. The Institute of Biomaterials, Tribocorrosion, Nano and Regenerative Medicine (IBTN) (ibtn.lab.uic.edu), University of Illinois at Chicago Invited lecture, What We Know About Mechanically Assisted Crevice Corrosion and What We Don't, August 19, 2021
135. MS&T Titanium Symposium, October 15-17, 2021, Invited Lecture, "Observations on the mechanically assisted crevice corrosion of titanium: Single asperity tribocorrosion of titanium alloy, and selective dissolution of beta phase of Ti-6Al-4V in physiologically representative conditions"

REFERREED ABSTRACTS, NON-REFEREED PAPERS AND CONFERENCE PROCEEDINGS

1. **Gilbert, JL**, Piehler, HR, "On Corrosion-Fatigue Crack Initiation in Ti-6Al-4V Hip Prostheses", Trans 13th Soc. for Biomaterials annual meeting, N.Y., NY, June 1987, pp 191.
2. **Gilbert, JL**, Lautenschlager, EP Greener, EH "Ultrasonic Measurement of Elastic Constants: Effects of Storage Time and Media", J. Dent. Res., Vol. 68, Abstract #541, presented at the 18th American Association for Dental Research annual meeting, San Francisco, CA, March 1989.
3. Dong, DR, Lautenschlager, EP, **Gilbert, JL**, "The Effects of Method and Rate of Loading on Shear Bond Strength Tests", J. Dent. Res., Vol. 68, Abstract #540, presented at the 18th American Association for Dental Research annual meeting, San Francisco, CA, March 1989.
4. Smith, SM, **Gilbert, JL**, "Tensile Properties of Oriented Acrylic: Effect of Tensile Stress Direction", J. Dent. Res., Vol. 68, abstract #542, presented at the 18th American Association for Dental Research annual meeting, San Francisco, CA, March 1989.
5. Wixson, RL, **Gilbert, JL**, Bloomfield, RS, "A Study of Micromotion of Primary Uncemented Custom Femoral Components Vs. Cemented Components", Second Annual International Symposium on Custom-Made Prostheses, Oct. 1989, Chicago, IL.
6. Tsao, A, Rintz, K, **Gilbert, JL**, Stulberg, SD, "Factors Leading to Metal Tibial Component Fracture", presented at the 57th American Academy of Orthopedic Surgeons annual meeting, New Orleans, February 1990.
7. **Gilbert, JL**, Menis, DL, Smith, SM, Lautenschlager, EP, "Effect of Pore Size and Morphology on Fatigue Crack Initiation in Acrylic Bone Cements", Trans of the Society for Biomaterials 16th annual meeting, Charleston, SC, May 1990, pp 103.
8. Menis, DL, Wixson, RL, **Gilbert, JL**, Lautenschlager, EP, "Effect of Vacuum Mixing on Interfacial Bone Cement Fracture Toughness", Trans of the Society for Biomaterials 16th annual meeting, Charleston, SC, May 1990, pp 67.
9. Smith, SM, Menis, DL, **Gilbert, JL**, Lautenschlager, EP, "Effects of Defects on Fatigue-Crack Initiation of Dental Acrylics", J. Dent. Res., Vol. 69, Abstract #1606, presented at the 68th Int Assoc for Dent Res annual meeting, Cincinnati, OH, March 1990.
10. Winkler, MM, **Gilbert, JL**, Lautenschlager, EP, "Scanning Electron Microscopy of Setting Gypsum", J. Dent. Res., Vol. 69, Abstract #2073, presented at 68th Int Assoc for Dent Res annual meeting, Cincinnati, OH, March 1990.

11. Mante, F, Chern Lin, JH, Greener, EH, **Gilbert, JL**, "Noble Metal Effects on Creep and Corrosion of Dental Amalgam", J. Dent. Res., Vol. 69, Abstract #179, presented at the 68th Int Assoc for Dent Res annual meeting, Cincinnati, OH, March 1990.
12. Boening, KW, Lautenschlager, EP, **Gilbert, JL**, Winkler, MM, "Limits of a Mathematical Corrosion Model," J. Dent. Res., Vol. 69, Abstract #1241, presented at the 68th Int Assoc for Dent Res annual meeting, Cincinnati, OH, March 1990.
13. Dong, DR, **Gilbert, JL**, Lautenschlager, EP, "Effects of Two Variables on Bonding Strength", Northwestern University Dental Research Journal, Vol. 2 No. 2, 1990.
14. **Gilbert, JL**, Bloomfeld, RS, Lautenschlager, EP, Stulberg, SD, Wixson, RL, "An In-Vitro Investigation of the Migration and Micromotion of Custom and Off-The-Shelf Cementless Prostheses", Trans Ortho Res Soc presented at the 37th Orthopedic Research Society annual meeting, Anaheim, CA, March 1991, p. 543.
15. Wixson, RL, Bloomfeld, RS, Lautenschlager, EP, Stulberg, SD, **Gilbert, JL**, "Comparison Study of Micromotion Between Anatomic and Custom Hip Femoral Component Designs", Trans. Amer. Acad. Ortho. Res., presented at the 58th Amer Acad of Orthop Surg annual meeting, Anaheim, CA, March 1991.
16. Smith, SM, **Gilbert, JL**, "The Scanning Potential Microscope: An Imaging Device for Microcorrosion Processes", J. Dent. Res., Vol. 70, Abstract #626, presented at the 69th Int Assoc for Dent Res annual meeting, Acapulco, Mexico, 1991.
17. Winkler, MM, Monaghan, P, Lautenschlager, EP, **Gilbert, JL**, "SEM Analysis of a Fast Setting Dental Stone", J Dent Res, Vol. 70, Abstract #1332, presented at the 69th Int. Assoc for Dent. Res. annual meeting, Acapulco Mexico, 1991.
18. Yeung, TC, Jameson, LM, **Gilbert, JL**, Fan, PL, Hesby, RA, "Bonding Between Visible Light Cured and Self-Curing Provisional Restoration Materials", Northwestern University Dental Journal, Vol. 2, No. 2, 1990, p 6.
19. Buckley, CA, Lautenschlager, EP, **Gilbert, JL**, "High Strength PMMA Fibers for use in a Self-Reinforced Acrylic Cement: Fiber Tensile Properties and Composite Toughness", Trans of the Society for Biomaterials 17th annual meeting, Scottsdale, AR, May 1991, pp 45.
20. Smith, SM, **Gilbert, JL**, "The Scanning Potential Microscope: An Instrument to Image Microcorrosion Processes on Metallic Biomaterials", Northwestern Dental Research, Vol. 2, No. 2, 1991, p 17.
21. Al-Jabab, AS, Greener, EH, Lautenschlager, EP, **Gilbert, JL**, "Metal Release from Low Melting Ternary Titanium Alloys", Northwestern Dental Research, Vol. 2, No. 2, 1991, p 17.
22. Mante, F, Greener, EH, Chern Lin, JH, **Gilbert, JL**, "Effect of Particle Configuration on Properties of Pd Containing Dental Amalgam", Northwestern Dental Research, Vol. 2 No. 2, 1991, p 19.
23. Menis, DL, **Gilbert, JL**, Wixson, RL, Lautenschlager, EP, "Fracture and Fracture Toughness of the Simplex-P Cement/Bone Interface", Northwestern Dental Research, Vol. 3, No. 1, 1991, pp 15.

24. Menis, DL, **Gilbert, JL**, Wixson, RL, Lautenschlager, EP, "Uniaxial Tensile Fatigue of Two Dental Acrylics and Simplex-P Bone Cement", Northwestern Dental Research, Vol. 3, No. 1, 1991, pp 16.
25. Menis, DL, **Gilbert, JL**, Wixson, RL, Lautenschlager, EP, "Four-Point Bend Fatigue of Simplex-P and the Simplex-P/Bone Interface", Northwestern Dental Research, Vol. 3, No. 1, 1991, pp 18.
26. Parker, A, Nuber, GW, **Gilbert, JL**, "Effects of the Method of Loading and Radial Head Excision on Strain in the Medial Collateral Ligament of the Elbow", presented at the AAOS, Feb. 24 1992, Washington D.C.
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282. Zhu D, Khullar P, **Gilbert JL**, "Long-term Fretting Corrosion Behavior of Si₃N₄/Ti-6Al-4V Head Neck Taper Interface", Trans ORS, 2019.
283. Smtih S, **Gilbert JL**, "Contact Mechanics and Fretting Corrosion Performance of PEEK and orthopaedic implant alloys: Preventing fretting corrosion damage in metallic orthopaedic implants: contact mechanics", Peek Conference, April, 2019.
284. Zhu D, Smith S, Chin J, **Gilbert JL**, "Effect of multipurpose storage solutions on the dimensional stability of hydrogel contact lenses", to be presented, Soc for Biomat., 2019, Seattle, WA.
285. Higgs, G, Shenoy, A, Khullar P, **Gilbert JL**, "Nondestructive Identification of Subsurface Corrosion Features in Orthopedic Alloys," ASTM workshop on Accelerated Aging of Medical Devices on Tuesday, May 14, 2019 in Denver CO.
286. Higgs G, Shenoy A, Khullar P, **Gilbert JL**, "A Quantitative Method to Assess Corrosion Severity," ASTM workshop on Accelerated Aging of Medical Devices on Tuesday, May 14, 2019 in Denver CO.
287. Smith S, **Gilbert JL**, "The role of contact mechanics on the fretting corrosion performance of PEEK-Metal taper junctions" PEEK Conference, Washington, DC, April 2019.
288. Khullar P, **Gilbert JL**, Zhu D, "Modular Head-Neck Taper Fretting Mechanics: Si₃N₄ vs CoCrMo Head on Ti-6Al04V Trunnion", ISTA, Toronto, CA, Oct 2-6, 2019.
289. Shenoy A, **Gilbert JL**, "Near-Field Electrochemical Impedance Spectroscopy (NEIS) Method for Retrieval Surface Analysis", ISTA Toronto, Canada, Oct 2-6, 2019.
290. Zhu D, Liu Y, **Gilbert JL**, Fretting Corrosion Debris Analysis of CoCrMo Alloy In Physiological Phosphate Buffered Saline ORS, Pheonix AZ, February 2020

291. Mace A, **Gilbert JL**, "Single Asperity Fretting Corrosion of CoCrMo, Ti6Al4V, and 316L Stainless Steel: Test Method Development", World Congress for Biomaterials, Glasgow, UK, May 2020
292. Liu Y, Zhu D, **Gilbert JL**, "Nano-tribocorrosion testing of Ti in the AFM", World Biomaterials Congress, Glasgow, Scotland, UK, May 2020.
293. Zhu D, Liu Y, **Gilbert JL**, "Micromechanical Measurement of Adhesion of Dehydrating Silicone Hydrogel Contact Lenses", Adhesion Society Annual Meeting, March, 2020.
294. Kurtz M, Khullar P, **Gilbert JL**, "", NACE RIP 2021.
295. Liu Y, Gilbert JL, "Sub-nano to nanoscale wear of titanium oxide-metal surfaces using atomic force microscopy, Society For Biomaterials Annual Meeting, Chicago, IL, April 23, 2021.
296. Mace, A, Gilbert JL, "Single micro-asperity fretting corrosion of CoCrMo, Ti-6Al-4V and 316L Stainless Steel", Society For Biomaterials, Annual Meeting, Chicago, IL, April 22, 2021.
297. Lee H, **Gilbert JL**, "Corrosion of CoCrMo in simulated modular taper crevice solution containing Co (II) ions", ORS, Tampa, 2022
298. Kurtz MA, Khullar P, **Gilbert JL**, "Cathodic Bias and Inflammatory Species Critical to simulating in vivo Ti-6Al-4V corrosion", ORS Annual Meeting, Tampa, 2022
299. Mace A, **Gilbert JL**, " Three million cycle in vitro fretting corrosion of two commercial acetabular modular taper designs", ORS, Tampa, 2022.
300. Liu Y, Mace A, **Gilbert JL**, "Nanoscale wear and tribocorrosion of CoCrMo alloy using atomic force microscopy", ORS, Tampa, 2022.
301. Mace A, **Gilbert JL**, "Corrosion and Fretting Corrosion Properties of Additively Manufactured Dental CoCrMoW Alloys", Society For Biomaterials Annual Meeting, April 2022.
302. Goodwin C, Aslan C, **Gilbert JL**, "A Retrieval Study of the Essure Micro Insert Female Sterilization Implant", Society For Biomaterials Annual Meeting, April, 2022.
303. Liu Y, **Gilbert JL**, "Effects of carbides and sliding amplitude on single asperity nanowear of CoCrMo alloys", Society For Biomaterials Annual Meeting, April 2022
304. Kurtz M, Moreno-Reyes A, Wessinger A, **Gilbert JL**, "Corrosion of Additively Manufactured Titanium Alloys in Simulated Inflammatory Solution: Ti-29Nb-21Zr Shows Improved Corrosion Resistance", ISTA, Hawaii, August 2022.
305. Kurtz P, Mace AO, **Gilbert JL**, "The effect of implant size on fretting currents of acetabular cup-liner tapers during in vitro cyclic loading", Orthop Res Soc, 2023, Accepted.
306. Goodwin CM, Mace A, Khullar P, Walton Z, **Gilbert JL**, "Corrosion characteristics of orthopedic alloys: Effects of retrieved synovial fluid and artificial physiological solutions", Orthop Res Soc, 2023, Accepted.

307. Kurtz MA, Phan L Lee H, Goodwin CM, Taylor LM, **Gilbert JL**,m “Synovial Fluid May Affect Ti-6Al-4V and CoCrMo Ion Release”, Orthop Res Soc, 2023, Accepted.
308. Kurtz MA, Wessinger AC, Taylor L, **Gilbert JL**, “Adverse electrochemical events affect Ti-6Al-4V oxide structure and passivation resistance”, Orthop Res Soc, 2023, Accepted.
309. Kurtz MA, Yang R Elapolu MSR, Liu D, Rai R, **Gilbert JL**, “Predidcting Ti-6Al-4V Corrosion Using Artificial Intelligence”, Soc For Biomat, in review, 2023.
310. Kurtz, MA, Wessinger AC, Taylor ML, **Gilbert JL**, “Cathodic Activation and Inflammatory Species Alter the Corrosion Resistance of Ti-6Al-4V Oxide”, Soc For Biomat, in review, 2023.
311. Kurtz MA, Liu D, **Gilbert JL**, “Ti-6Al-4V Selective Dissolution is Identifiable Using Nearfield Electrochemical Impedance Spectroscopy”, Soc For Biomater, In review, 2023.
312. Goodwin CM, **Gilbert JL**, “Tin Silver Impedance Behavior in Physiological Solutions”, Soc For Biomat, in review, 2023.
313. Kurtz P, Mace AO, **Gilbert JL**, “Low Power electron Beam Modification of Metallic Biomaterial Surfaces”, Soc For Biomat, in review, 2023.

REVIEWER: Peer reviewer for:

1. 1993 International Association for Dental Research Annual Meeting, Dental Materials program committee.
2. 1993, 1995 and 1997-2002 Society for Biomaterials Conference, abstract reviewer and program committee (1993, 1995, 2005).
3. J. of Biomechanics,
4. J. Biomedical Materials Research –A
5. J. Biomedical Materials Research –B, *Applied Biomaterials*
6. Clinical Orthopedics and Related Research
7. ASTM special technical publications
8. Cambridge University Press
9. University of Illinois at Chicago Dental Research.
10. National Science Foundation in the area of Biomaterials.
11. Natural Sciences and Engineering Research Council of Canada, 1995, 2003, 2005-2009.
12. J. Orthopaedic Research
13. Dental Materials
14. J. Applied Biomaterials
15. J. Prosthodontics
16. J. Bone and Joint Surgery
17. J. Dental Research
18. Journal of Corrosion Science
19. J. of Dentistry
20. *Biomaterials*
21. Materials Science and Engineering
22. J. of Electrochemical Society
23. National Research Council of Canada
24. Scripta-Materialia
25. Acta Biomaterialia
26. J. Orthop. Res.

27. Electrochemica Acta
28. Surfaces and Interfacial Analysis
29. Journal of the Biomechanics of Biomaterials
30. Surface Science
31. Langmuir
32. Corrosion Science
33. Science, Translational Medicine
34. Wear of Materials
35. Journal of Bio-Tribocorrosion.
36. ASTM STP 1591
37. PLOS One
38. Corrosion
39. JBJS Case Review
40. Wear
41. Applied Physics B
42. Applied Physics A
43. Bioelectrochemistry
44. Journal of Arthroplasty
45. Tribology International
46. Bone and Joint Research
47. Journal of Arthroplasty
48. Journal of the Mechanical Behavior of Biomedical Materials

PEDAGOGICAL ACTIVITIES

1. **Engineering Materials, Processes and Properties**, - Junior level, college-wide introduction to materials science class, class size approximately 240 students, taught in every year since 2000, until 2016.
2. **Advanced Biomechanics**, Senior undergraduate, 1st year graduate course on biomechanics, developed in 2000, taught once per year.
3. **Surfaces of Biomaterials** – First year graduate class, developed in 2000. Combines elements of electrochemistry, electrokinetic theory, DLVO theory, surface analytical methods, AFM, tribocorrosion, etc., to study biomaterials surfaces and their interaction with the biological milieu.
4. **Biomaterials and Medical Devices** – Senior undergraduate, 1st year graduate course on the introduction to biomaterials science, and medical device performance and failure mechanisms (once-per year for 17 years).
5. **Advanced Biomaterials: Metals** – Graduate Level Course on the theory of metals used in medicine and dentistry (Once per year for 9 years), 1988-1997
6. **Corrosion of Biomaterials** – Graduate level course on electrochemistry and corrosion of biomaterials, electrochemical phenomena in biological systems and various methodologies to study electrical phenomenon in biology, medicine and corrosion science.
7. **Advanced Biomaterials: Polymers** Graduate level course on polymers used in medicine and dentistry. Polymerization mechanisms, mechanical properties, viscoelasticity, thermal properties, molecular orientation phenomena. (Taught twice alone and twice with a colleague)

8. **Scanning Electron Microscopy** – graduate level course on the theory and application of electron beam methods in materials analysis. (every other year for 8 years).
9. **Instrumentation for Biomaterials Analysis** – graduate level course on methods and instruments used for biomaterials analysis. Computer data acquisition techniques, DSC, FTIR, Mechanical Testing, XRD.

10. Professional Development in Bioengineering

11. Dental Materials - undergraduate DDS students on dental materials
12. Orthopedic Resident lectures on biomaterials

ACADEMIC COMMITTEES and ACTIVITIES:

- Research Policy Implementation Committee, Northwestern University, 1990-1998, Chair 1993-1998
- Admissions Committee, Dental School, Northwestern University, 1990-1992
- Dental Council, Northwestern University, 1990-1996
- Search Committee for Prosthodontics Chairman Position, Northwestern University, 1990
- Strategic Planning Committee for Orthopedics Research, Northwestern University, 1990-1991
- Member of the Medical Biomechanics Group, Northwestern University, 1990-1993
- Ad-Hoc Committee for Research Foundation of Dental School, Northwestern University, 1990
- Budget Committee of the Dental School, Northwestern University 1992-1993
- Search Committee for Clinical Faculty in Periodontics, Northwestern University, 1992
- Search Committee for Division Director in Prosthodontics, Northwestern University, 1992
- Search Committee for Restorative Faculty, Northwestern University, 1995
- Program Review Committee, Dental School, Northwestern University, 1995-1996
- General Faculty Committee (GFC), Northwestern University, 1995-1998
- Search Committee, Basic and Behavioral Sciences Chair, Northwestern University, 1996-1997
- GFC subcommittee on Research Affairs, Northwestern University, Chair, 1996-1997
- Program Chairman for Research Day, Northwestern University Dental School, 1994-1998
- Chair of Strategic Planning Committee for Research At NUDDS, 1995
- Vice Chair of General Faculty Committee of Northwestern University, 1997-1998
- GFC subcommittee Chair for Faculty Governance and Program Review, Northwestern U. 1997-1998
- Chair, Faculty search committee for Bioengineering Faculty member, Syracuse, 1999
- LC Smith College of Engineering and Computer Science Representative to the University Senate, Syracuse University 1999-2003
- Member College Promotion and Tenure Committee, Syracuse University, 1999-2001
- Co-Author of Department of Bioengineering and Neuroscience proposal for an integrated graduate program in bioengineering – Approved by Department, College, University and NY State Department of Education 2001
- Member Institutional Animal Care and Use Committee (IACUC), 2001-2002
- Chair Syracuse University Senate Committee on Research, 2003
- University Senate Ad-Hoc Committee for Vice Chancellor Performance Review, 2005
- University Senate Budget Committee, 2006-2010
- University Senate Committee on Interdisciplinary Research/Middle States Accreditation, 2006-2007
- University Senate Research Committee, Chair, 2006-2008

Biomedical and Chemical Engineering Stevenson Endowed Professorship Search, 2006
Biomedical and Chemical Engineering Assistant Professorship (2 positions) Search, Chair, 2007
Ad-Hoc special studies committee of the Vice Chancellor on Information Technology Utilization, 2007
L.C. Smith College of Engineering Promotions and Tenure Committee, 2010-2012, Chair, 2011-2012
College Strategic Planning Committee: Platform 1 (Research), Platform 5 (External Relations and Communications), 2011-2012
Chair, Department of Biomedical and Chemical Engineering, Promotion and Tenure Committee, 2013
Syracuse University Strategic Planning Committee for Research and Doctoral Education, 2014-2015
Faculty Advisory Committee for a Veterans-Focused Medical School, 2015-2016.
Search committee, Chair of Mechanical and Aerospace Engineering, Syracuse University, 2016
Department Chair Review Committee, Clemson Bioengineering, 2017.
Department of Bioengineering Tenure and Promotion Review committee, 2017-present
Department of Bioengineering Work Effort Assessment Ad Hoc committee, 2017-2018
Vice President for Research Advisory Committee, MUSC, 2017-2018.
College of Graduate Studies Committee on graduate education, 2017-2018
Member of the Graduate Faculty, Medical University of South Carolina, 2017-present
Department of Bioengineering, Faculty Advisory Committee, Clemson University, 2018-present
Chair, Bioengineering Department Chair Search Committee, Clemson University 2022-2023