John D. Jarrell, PhD, PE

EDUCATION- PhD, Biology, Medical Science and Engineering, Brown University, Providence, RI, May, USA, 2008
MSc, Materials Science and Engineering, Brown University, Providence, Rhode Island, May 1991
Professional Engineer License (PE), Mechanical Engineering, Rhode Island, February 14, 1996
ScB, Materials Science and Engineering, Brown University, Providence, Rhode Island, May 1988

Dr. John D. Jarrell, PhD, PE, is an experienced multi-discipline engineer and doctor of medical science specializing in consultation and expert opinions related to product development, intellectual property, risk, failure analysis, legal cases, product liability, accidents and personal injuries. His expertise includes the analysis of complex systems, designs and failures involving materials, mechanical, medical systems and warnings. As a licensed Professional Mechanical Engineer, he is actively involved in design, product development and research. He earned three degrees from Brown University, a Bachelors and Masters of Science in Materials Science and Engineering and a Doctorate in Biology, Medical Science and Engineering and received Medical training in histology, physiology, microbiology and pathology. He has had appointments in the Department of Orthopaedics at the Alpert Medical School of Brown University and at the Weiss Center for Orthopaedic Trauma Research at Rhode Island Hospital. He has US and foreign patents covering photoactive materials, active delivery films, biomaterials, topical applicators, antimicrobials, diagnostic devices and medical applications. He is the author of multiple peer reviewed publications and abstracts in collaboration with academic, hospital and government investigators and authored a guidebook on materials selection for designers. He has been awarded contracts by the Department of Veterans Affairs, Rhode Island Hospital and the US Department of Justice. He has been an ASTM member for standards Committees F04, Medical and Surgical Materials and Devices and E58 on Forensic Engineering.

SOCIETY AFFILIATIONS- ASTM Intl.; Orthopaedic Research Society (ORS); Society for Biomaterials; National Society of Professional Engineers (NSPE); American Society for Materials, International (ASM); International Metallographic Society (IMS); Heat Treating Society (HTS); Society of Carbide and Tool Engineering (SCTE); Electronic Device Failure Analysis Society (EDFAS); Society for Automotive Engineering International (SAE); Surfaces in Biomaterials Foundation; International Association for Property and Evidence (IAPE), The International Congress for Joint Reconstruction (ICJR), National Association of Corrosion Engineers (NACE, Int.)

CERTIFICATIONS- Hazardous Waste, Laboratory Safety, Blood Borne Pathogens (Brown University), Electrosurgery CE Module (Valleylab, Institute of Clinical Education) Electrosurgery; Best Practices for Electrosurgery (Pfiedler Enterprises, 4hr CE, 2016), Human Participant Protections Education for Research Teams (National Institutes of Health), CITI Course in The Protection of Human Research Subjects, ISO 10993 Biological Evaluation of Medical Devices (NAMSA). Asbestos awareness training.

AWARDS & HONORS- 1) Best in Show, 1st, 2nd & 3rd Place Microscopy, ASM Intl., RI Chapter, 1994 **2)** Sigma Xi Honor Society. **3)** RI Business Plan Contest winner 09' & 17' **4)** RI House of Rep. Citation for developing a proprietary technology to thwart infection relating to medical device use, 5-09. **5)** RI House of Rep. and Secretary of State, Certificate of Congratulations, (Res. 09-264) 6-09. 6) 2010 RI Innovation Award in Health Care & Biotechnology Innovations. **7)** RI Governor Chafee Citation for 2014 RI Bioscience Award **8)** PBN Fastest Growing Businesses 14', 15', Award for Entrepreneurship 17'

EMPLOYMENT & APPOINTMENTS

Teaching Associate in Orthopaedics, February 1, 2010 through June 30, 2019, Department of Orthopaedics, Alpert Medical School, Division of Biology and Medicine, Brown University. Biomaterials, surface treatments, bacteria and biofilm researcher for implant materials including stainless steel, titanium and cobalt chromium alloys, ceramics, PEEK, as well as silicone, polyurethane, thermoplastics and fabrics for prosthetics.

Founder, November 2019 to 2025, NE Finest LLC, Coventry, RI. Established an FDA registered drug manufacturer and labeling and packaging company. Oversaw the formulation, manufacture and packaging of hand sanitizer for the state of Rhode Island and regional healthcare facilities. Company regulatory contact with the FDA for drug products.

Founder, March 2016 to 2025, BI Medical LLC, Coventry, RI. Developed system for cleaning and treating prosthetic liners, including chemical coatings within a point of use applicator and a non-soap cleanser. Responsible for developing formulations, manufacturing processes, instructions for use and warnings. Provided oversight of scientific research related to testing of end product efficacy. Company regulatory contact with the FDA for a listed medical device.

Founder, President and Managing Director January 2009 to present, BIOINTRAFACE INC., Coventry, RI. Coordinates R&D and intellectual property for comprehensive collaborative development of Basic Science Research into practical

medical technologies and treatments for medical devices and implants. Surface treatments and coatings for implants & medical devices. Company regulatory contact with the FDA for orthopedic implants.

President, April 1993 to present, ***M***ATERIALS ***S***CIENCE ***A***SSOCIATES, LLC, Coventry, RI. Biomedical Engineering, Metallurgical, Materials Science & Mechanical Engineering consulting services for Government, Hospital, Legal, Insurance, Medical, and Manufacturing needs. Performs failure analysis, materials, process and site evaluations, biomaterial and medical implant design and testing, fabrication and surgery, professional reports, oral presentations & expert opinions.

Materials Science Engineer, March 1991 to March 1993, Thielsch Engineering Inc., Cranston, RI. Provided engineering and failure analyses for local clients, including analysis of fastener systems, pressurized vessels and piping, electrical components, bearings, medical devices & coatings, nuclear components, manufacturing processes, materials and process selection. Specialized in fractography, chemical & corrosion analysis. Received in-house training from Helmult Thielsch, Sr., PE.

Research and Teaching Assistant, September 1989 to February 1991, Brown University, Department of Advanced Materials Research, Providence, RI. Investigated a lightweight aerospace material for Martin Marietta Laboratories, with enhanced room temperature fracture toughness and the effect of high rate pressure-shear on copper foils, for the Office of Naval Research.

Engineering Investigator, March 1987 to September 1989, Avery Technical Services (ATS), Inc., Barrington, RI. Investigated, analyzed, and documented industrial, home and automotive incidents involving mechanical and material failures for legal and insurance purposes. Specialized in personal and industrial accident reconstructions.

RESEARCH PUBLICATIONS

Jack M. Haglin, BS, Dioscaris R. Garcia, PhD; Daniel L. Roque, BS, Carole SL. Spake, MSc, **John D. Jarrell, PhD**, Christopher T. Born, MD, Assessing the Efficacy of a Silver Carboxylate Antimicrobial Coating on Prosthetic Liners, Journal of Prosthetics and Orthotics (JPO), October 2020 - Volume 32 - Issue 4 - p 251-257 doi: 10.1097/JPO.0000000000000271

Dioscaris R. Garcia, David G. Deckey, Alexandra Zega, Cory Mayfield, Carole S. L. Spake, Toby Emanuel, Alan Daniels, **John Jarrell**, Jillian Glasser, Christopher T. Born & Craig P. Eberson, Analysis of growth and biofilm formation of bacterial pathogens on frequently used spinal implant materials. Spine Deform (24 February, 2020). https://doi.org/10.1007/s43390-020-00054-z

Dioscaris R. Garcia, PhD; David Deckey, BS; Jack M. Haglin, BS; Toby Emanuel, MD; Cory Mayfield, BS; Adam E. M. Eltorai, MSc; Carole SL Spake, MSc; **John D. Jarrell, PhD**; Christopher T. Born, MD, Review: Commonly Encountered Skin Biome-Derived Pathogens after Orthopedic Surgery, Surgical Infections, 20, no. 5 (2019): 341-350. (Published Online:6 Mar 2019https://doi.org/10.1089/sur.2018.161).

Jay M. Vincelli, Fatih Calakli, Michael A. Stone, Graham E. Forrester, Timothy Mellon, and **John D. Jarrell**. Identification of a putative man-made object from an underwater crash site using CAD model superimposition, Forensic Science International, Volume 285, April 2018, Pages 129-134.

Jay M. Vincelli, Fatih Calakli, Michael A. Stone, Graham E. Forrester, Timothy Mellon, and **John D. Jarrell**. "Characterizing a Debris Field Using Digital Mosaicking and CAD Model Superimposition from Underwater Video." Photogrammetric Engineering & Remote Sensing 82, no. 3 (2016): 223-232.

Nhiem Tran, Michael N. Kelley, Phong A. Tran, Dioscaris R. Garcia, **John D. Jarrell**, Roman A. Hayda and Christopher T. Born. Silver Doped Titanium Oxide - PDMS Hybrid Coating Inhibits Staphylococcus aureus and Staphylococcus epidermidis Growth on PEEK, Materials Science and Engineering: C 49 (2015): 201-209.

Nathan P. Thomas, Nhiem Tran, Phong A. Tran, Jerry L. Walters, **John D. Jarrell**, Roman A. Hayda, Christopher T. Born, Characterization and Bioactive Properties of Zirconia based Polymeric Hybrid for Orthopedic Applications, Journal of Materials Science: Materials in Medicine, 25:347-354 (2013).

Matthew D. Young, Nhiem Tran, Phong A. Tran, **John D. Jarrell**, Roman A. Hayda, Christopher T. Born. Niobium oxide–polydimethylsiloxane hybrid composite coatings for tuning primary fibroblast functions, J Biomed Mater Res A, (Online JUNE 24, 2013), 102 (5), 1478-1485.

Nhiem Tran, Phong Tran, **John D Jarrell**, Julie Engiles, Matthew Young, Nathan Thomas, Roman Hayda and Christopher Born. In vivo Caprine Model for Osteomyelitis and Evaluation of Biofilm Resistant Intramedullary Nails, BioMed Research International, vol. 2013, Article ID 674378, 11 pages, 2013. doi:10.1155/2013/674378

J. Jarrell, N. Thomas, M. Young, C. Baker, J. Morgan, P. Tran, N. Tran, R. Hayda, C. Born. Bioactive Hybrid Material Surface Treatments for Infection Resistant Implants without Drugs, ASM, Medical Device Materials VI, Proceedings from the Materials and Processes for Medical Devices Conference, August 8–10, 2011, Minneapolis, Minnesota, USA, pg 143-148.

J. Jarrell, J. Walters, N. Thomas, M. Young, P. Tran, N. Tran, R. Hayda, C. Born. Improving the Bioresponse to Polymers using Zirconium and Tantalum Hybridization, ASM, Medical Device Materials VI, Proceedings from the Materials and Processes for Medical Devices Conference, August 8–10, 2011, Minneapolis, Minnesota, USA, pg 74-79.

Jarrell JD, Dolly B, Morgan JR. Rapid screening, in vitro study of metal oxide and polymer hybrids as delivery coatings for improved soft-tissue integration of implants. J Biomed Mater Res A, Volume 92A, Issue 3, Pages 1094-1104, 1 March 2010.

Puckett, Sabrina D., Deborah M. Ciombor, **John Jarrell**, Roy K. Aaron, and Thomas J. Webster. "In vitro and in vivo studies of electron beam evaporated titanium surfaces for orthopedic applications." In Bioengineering Conference, 2009 IEEE 35th Annual Northeast Bioengineering Conference, pp. 1-2. IEEE, 2009.

Jarrell JD, Dolly B, Morgan JR. Controlled release of vanadium from titanium oxide coatings for improved integration of soft tissue implants. J Biomed Mater Res A, Volume 90A, Issue 1, Pages 272-281, June 2009.

Jarrell JD. Active metal oxides and polymer hybrids as biomaterials. PhD Thesis, Brown University, Providence RI, USA 2008.

Jarrell JD, Eun TH, Samale M, Briant C, Sheldon BW, Morgan JR, Metal Oxide Coated (MOC) Cell Culture Arrays for Rapid Biological Screening. Journal of Biomedical Materials Research: Part A 2007;83A:853-860.

JD Jarrell, Dislocation Structures of OFHC Copper Deformed by High Rate Pressure-Shear, Master's Thesis: Brown University, Providence, RI, May 1991.

ABSTRACTS

Jarrell, J.D., Garcia, D.R., Born, C.T., The Efficacy of Silver Carboxylate Coatings on Prosthetic Liners, American Academy of Orthotists & Prosthetists (AAOP) 45th Academy Annual Meeting & Scientific Symposium, March 6-9, 2019.

Jarrell J.D, Garcia D.R, Born C.T., INHIBITING PSEUDOMONAS AERUGINOSA GROWTH ASSOCIATED WITH PROSTHETIC LINERS. CANADIAN PROSTHETICS & ORTHOTICS JOURNAL (CPOJ), VOLUME 1, ISSUE 2, 2018; ABSTRACT, POSTER PRESENTATION AT THE AOPA'S 101ST NATIONAL ASSEMBLY, SEPT. 26-29, VANCOUVER, CANADA, 2018.

Jarrell, J.D., Garcia, D.R., Born, C.T., Cleaning-coating technology reduces bacterial by-products on liners, American Academy of Orthotists & Prosthetists (AAOP) 44th Academy Annual Meeting & Scientific Symposium, February 14 – 17, 2018.

Deckey DG, Garcia DR, Daniels AH, Zega AM, Kondo A, **Jarrell JD**, Eberson CP Green A, Hayda RA, Born CT. Characterization of the Adherence Patterns and Biofilm Density of Commonly Encountered Bacterial Pathogens to Spinal Instrumentation of Differing Compositions Podium Presentation AAOS Annual Meeting San Diego, CA 2017

Minnah A, Nguyen E, Garcia DR, **Jarrell JD**, Born CT. An Analysis of the Antimicrobial Effects of a Ag-doped TiO2-PDMS coating on the adherence and proliferation of Multidrug Resistant A. baumannii and Vancomycin Resistant E. faecalis on Orthopaedic Biomaterials, Poster Presentation AAOS/OTA/SOMOS/ORS Extremity War Injuries XII: Homeland Defense as a Translation of War Lessons Learned Washington, DC. 2017

Gardezi M, Glasser J, Garcia D, Born CT, **Jarrell J**. Fluorescent-Conjugated Antibodies as Markers of Bacterial Infection on Surgical Sites. Poster Presentation Brown University UTRA Symposium and Rhode Island Hospital Research Day, Providence, RI. 2017

J. Vincelli, **J. Jarrell**, Non-polar loading in metal-on-metal hip retrievals, 2nd International Conference on BioTribology, Toronto, Canada, 11-14 May 2014.

J. Vincelli, **J. Jarrell**, Metal-on-Metal Hip Wear Patterns of Explanted Components Do Not Match Simulator Results, Society For Biomaterials 2014 Annual Meeting and Exposition: Denver, CO, USA, April 16-19, 2014.

Nhiem Tran, Michael N. Kelley, **John D. Jarrell**, Roman A. Hayda, Christopher T. Born, Silver Doped Titania – Siloxane Hybrids: Novel Coatings for Improving Antibacterial Property of Polyether Ether Ketone (PEEK), The Stevens Conference: The 2nd Conference on bacteria-Materials Interactions, Hoboken, NJ, June 2013.

J.D. Jarrell, N. Tran, P.A. Tran, J. Engiles, R.A. Hayda, C.T. Born. Bioactive hybrid materials coating for infection resistant implants and devices, Hybrid Materials 2013, Third International Conference on Multifunctional, Hybrid and Nanomaterials, Sorrento, Italy, March, 2013.

J.D. Jarrell, N. Tran, R.A. Hayda, C.T. Born, Antimicrobial silver release from titanium oxide polymer hybrid coated PEEK, Hybrid Materials 2013, Third International Conference on Multifunctional, Hybrid and Nanomaterials, Sorrento, Italy, March, 2013.

Jarrell JD; Tran N; Born CT. Improving the Bioactive properties of Polyether ether ketone (PEEK) with Antimicrobial Titanium Oxide Hybrid Coatings. 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, Texas, January 2013.

Tran N, Tran PA, Baker C, **Jarrell JD**, Hayda RA, Born CT. In vitro and in vivo evaluation of bioactive hybrid materials coating for infection resistant implants. Journal of Tissue Engineering and Regenerative Medicine, Proceeding of TERMIS 2012.

Jarrell JD; Tran PA; Baker C; Morgan JR; Hayda RA; Born CT. Bioactive Hybrid Material Surface Treatments for Infection Resistant Implants without Drugs, ASM, Materials and Processes for Medical Devices 2011, Annual Meeting and Exposition: Minneapolis, MN, USA, August 8-10, 2011.

Tran PA; **Jarrell JD**; Baker C; Hayda RA; Born CT**.** Improving the Bioresponse to Polymers using Zirconium and Tantalum Hybridization, ASM, Materials and Processes for Medical Devices 2011, Annual Meeting and Exposition: Minneapolis, MN, USA, August 8-10, 2011.

Jarrell JD; Tran PA; Baker C; Morgan JR; Hayda RA; Born CT. Surface Treatments for Orthopaedic Implants which Prevent Bacteria Growth and Support Cell Proliferation, Society For Biomaterials 2011 Annual Meeting and Exposition: Orlando, Florida, April 13 - 16, 2011.

Tran PA; **Jarrell JD**; Baker C; Morgan JR; Hayda RA; Born CT**.** Effects of Addition of Transition Metal Oxides to Polymer on Growth of Human Cells, Society For Biomaterials 2011 Annual Meeting and Exposition: Orlando, Florida, April 13 - 16, 2011.

Jarrell, J D; Young M D; Walters J L; Trans P; Born, C T. Transitional Metal Oxide Hybrid Surface Treatments for Bioactive and Antimicrobial Orthopaedic Trauma Implants, 57th Annual Meeting of the Orthopaedic Research Society, Transactions Vol. 36, No. 1550, Long Beach, CA, January 2011.

Tran PA; **Jarrell J D;** Young MD; Walters JL; Hayda RA; Born CT. Hybrid Surface Treatments for Bioactive and antimicrobial Orthopaedic Trauma Implants, 18th Annual Hospital Research Celebrations, Rhode Island Hospital, October 21, 2010.

Jarrell, J D; Spenciner, D; Morgan, J R; Hayda, R A; Born, C T. Antimicrobial Hybrid Coatings for External Fixation Pins, Society For Biomaterials 2010 Annual Meeting; April 21 - 24, 2010 in Seattle, Washington, USA.

Sabrina D. Puckett, Deborah M. Ciombor, **John Jarrell**, Roy K. Aaron, and Thomas J. Webster. In Vitro and In Vivo Studies of Electron Beam Evaporated Titanium Surfaces for Orthopedic Applications, Bioengineering Conference, 2009 IEEE 35th Annual Northeast, 3-5 April 2009, Boston, MA, USA, pg1-2.

Jarrell, J D; Puckett, S; Morgan, J R; Hayda, R A; Born, C T. Durability of Bioactive, Antimicrobial Biointerface on External Fixation Pins, 56th Annual Meeting of the Orthopaedic Research Society, New Orleans, Louisiana, Transactions Vol. 35, No. 2177, New Orleans, LA, 2010.

Jarrell, J D; Werlin, E C; Weinstock, B; Puckett, S D; Morgan, J R; Ciombor, D M; Aaron, R K. Rapid Development of Photoactive Solid State Dispersions as Biointerfaces for Orthopaedic Implants, Hybrid Materials 2009, First International Conference on Multifunctional, Hybrid and Nanomaterials, Transactions, A1.3.07, Tours France, March, 2009.

Jarrell, J D; Werlin, E C; Weinstock, B; Puckett, S D; Morgan, J R; Ciombor, D M; Aaron, R K. Rapid Development of Biointerfaces for Antimicrobial Transcutaneous Osseointegrated Implant Devices (TCOIDs). 55th Annual Meeting of the Orthopaedic Research Society, Transactions Vol. 34, No. 0555, Las Vegas, NV, February, 2009.

John D Jarrell, Evan C Werlin, Sabrina Puckett, Jeffrey R Morgan. Active metal oxide and polymer hybrid coatings for antimicrobial devices. BioInterface 2008, Annual Symposium, Surfaces in Biomaterials Foundation, Min., MN, October, 2008.

Evan C. Werlin, **John D. Jarrell**, Jeffrey R. Morgan, The Effect of Precursor Selection and Coating Thickness on the Photoactivity of a Novel Metal-Polymer Hybrid. 34th Annual North East Bioengineering Conference, April 4-6, 2008.

JD Jarrell, EC Werlin, JR Morgan. Novel light-activated antimicrobial controlled delivery polymer hybrids for osseointegrated transcutaneous devices. 54th Annual Meeting of the Orthopaedic Research Society, Transactions Vol. 33, No. 1729, San Francisco, CA March, 2008.

John D Jarrell and Jeffrey R Morgan. Bioactive Polymer Hybrids to Improve the Soft Tissue Seal Around Percutaneous Devices. BioInterface 2007, Annual Symposium, Surfaces in Biomaterials Foundation, San Mateo, CA, October 31, 2007.

John D. Jarrell, Jeffrey R. Morgan, Bioactive Polymers for Soft Tissue Sealing of Osseointegrated Prosthetic Attachments, 6th Combined Meeting of the Orthopaedic Research Societies, Honolulu, Hawaii, No. 0063, October 21-24, 2007

Morgan, J.R., **Jarrell, J.D.**, Holt, B., Tripathi, A.., and Aaron, R.K. Optimizing the Soft Tissue Seal of a Percutaneous Osseointegration Device. No Barriers Symposium, Squaw Valley, CA. June 30, 2007.

Morgan, J.R**., Jarrell, J.D.**, Holt, B., Tripathi, A., Webster, T., Ciombor, D.M., and Aaron, R.K. Optimizing the Soft Tissue Seal of a Percutaneous Osseointegration Device. 4th International Meeting, Ten Years of the US-Russian Program in Prosthetics and Rehabilitation, New England Sinai Hospital, Stoughton, MA, June 18, 2007.

John D. Jarrell, Tai Hee Eun, Marcus Samale, Clyde Briant, Brian W. Sheldon, Jeffrey R. Morgan, Use of specialized metal oxide films for delivery of bioactive metal compounds, Orthopaedic Research Society, Transactions Vol. 32, No. 1590, San Diego, CA, 2007.

JD Jarrell, Crisco, J.J.*, Moore, D.C.*, McGovern, R.D.*, Coating of Stainless Steel Bone Cutting Devices Enhances Functional Performance, Society for Biomaterials, 23 rd Annual Meeting in conjunction with the 29th Internationals Biomaterials Symposium, New Orleans, Louisiana, April-May 1997, vol. xx, pg 416. (*Orthopedic Research Laboratories, Rhode Island Hospital)

J.D. Jarrell, A Non-Wetting, Conductive Coating Replacement for Teflon (PTFE) in Surgical Applications, Surfaces in Biomaterials '94, Scottsdale, Arizona, September 1994.

JD Jarrell, Chemical Passivation of Stainless Steels Eliminated By Using ME-92 Chromium Composition Coating, Society for Biomaterials, 20th Annual Meeting in conjunction with the 26th Internationals Biomaterials Symposium, Boston, Massachusetts, April 1994

RJ Clifton, W Tong, **JD Jarrell**, Brown University, Dislocation Structures and the High Rate Deformation of Pure Metals, Greece Symposium, 1990.

INDUSTRY PUBLICATIONS

Jarrell JD., BioIntraface®: The Next Quantum in Medical Devices. R I Med J (2013). 2013 Feb 1;96(2):26-8.

JD Jarrell and Frank Bejbl, Medical Plastics and Biomaterials: Special Section, Understanding Wear and Friction in Medical-Grade Stainless Steels, Medical Device & Diagnostic Industry, Canon Communications, August 1999, pg 50-57.

JD Jarrell, Safe, Smooth, Stable Coating Alternative to Teflon, Job Shop Technology Magazine, Prospect, CT, April 1998.

JD Jarrell, Improper Cleaning of Stainless Steels can Cause Delayed Cracking, Job Shop Technology Magazine, Prospect, CT, November 1994.

JD Jarrell and Frank Bejbl, Versatile Coating for Stainless Steel, Medical Materials Update, BBC, Inc., Publication, Norwalk, CT, USA, Volume 1, Number 5, June 1994.

JD Jarrell, Chemical Passivation of Stainless Steels Eliminated By Using ME-92 Chromium Composition Coating, Job Shop Technology Magazine, July 1994.

JD Jarrell, Chemical Passivation of Stainless Steels Eliminated By Using ME-92 Chromium Composition Coating, Medical Equipment Designer Magazine, March 1994.

BOOKS

JD Jarrell, The Medical Device Designer's Guide to Wear and Friction, ME-92 Operations, Providence, Rhode Island, USA, April 1995.

BULLETINS

JD Jarrell, Using Medical Grade Coating Technology to Address Nickel Sensitization, ME-92 Operations Bulletin Report, by Materials Science Associates, Providence, RI, May 6, 1994.

JD Jarrell, Improving the Wear, Galling and Frictional Characteristics of Medical Instruments with ME-92® Coating, ME-92 Operations, Internal Report by Materials Science Associates, Providence, RI, November 1993.

JD Jarrell, Use of ME-92 Coating to Reduce the Risk of Exposure to Bioreactive Nickel-Bearing Materials," ME-92 Operations Bulletin Report, by Thielsch Engineering Inc., Cranston RI, April 22, 1993.

SEMINAR PRESENTATIONS

2018 Academy Webinar Series: Cleaning-Coating Technology Reduces Bacterial By-Products on Liners, American Academy of Orthotists & Prosthetists (AAOP), ABC continuing education credit given.

Invited Panelist: Rhode Island Perspectives on Advancing Research, Development, and Medical Innovation- Senator Sheldon Whitehouse and the RI Tech Collective hosted roundtable discussion to hear from Rhode Island's biotech industry about opportunities and barriers to translating scientific discovery into innovative treatments and medications for patients. This discussion will inform Senator Whitehouse's work with the Senate Health, Education, Labor, and Pensions Committee to examine current policies and processes at the National Institutes of Health and Food and Drug Administration and identify reforms to foster medical innovation, support the next generation of research scientists, and get treatments to patients quickly and safely. **Tech Collective, Providence, RI, June 15, 2015**

Invited Speaker: Trends & Opportunities in the Engineering Industry
CareerBuilder.com, WebEx Conference, December 5, 2008.

Active metal oxide and polymer hybrid coatings for antimicrobial devices
BioInterface, Workshop and Symposium, Antimicrobial Surfaces Session, Minneapolis, MN, October 28, 2008.

Novel light-activated antimicrobial controlled delivery polymer hybrids for osseointegrated transcutaneous devices.
54th Annual Meeting of the Orthopaedic Research Society, March, 2008.

Bioactive Polymers for Soft Tissue Sealing of Osseointegrated Prosthetic Attachments,
6th Combined Meeting of the Orthopaedic Research Societies, Honolulu, Hawaii, October, 2007

Advanced Bioactive Hybrid Materials for Percutaneous Devices,
Rhode Island Hospital, Grand Rounds, Student Research Day, May 23, 2007

Use of specialized metal oxide films for delivery of bioactive metal compounds
Orthopaedic Research Society, San Diego, CA, February, 2007.

Rapid biological screening of metal-organic coatings for percutaneous devices,
Regional Bioengineering and Biotechnology Conference U. Mass. Dartmouth, February 9, 2007

Invited Speaker: Fatigue failure of a stainless steel propeller shaft,
National Association of Marine Surveyors, New England Region, October 26, 2001
Awarded Certificate of Appreciation for Outstanding Presentation

Invited Speaker: Metallurgical failure analysis,
National Association of Marine Surveyors, New England Region, November 5, 1999
Awarded Certificate of Appreciation for Outstanding Presentation

A Non-Wetting, Conductive Coating Replacement for Teflon (PTFE) in Surgical Applications,
Surfaces in Biomaterials '94, Scottsdale, Arizona, September 1994

Chemical Passivation of Stainless Steels Eliminated By Using ME-92 Chromium Composition Coating, **Society for Biomaterials, 20th Annual Meeting in conjunction with the 26th Internationals Biomaterials Symposium, Boston, Massachusetts, April 1994**.

INVITED REVIEWER FOR:

Journal of Biomedical Materials Research: Part A
Official Journal of the Society for Biomaterials (USA)
John Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030, USA

Medical Science Monitor
International Medical Journal for Experimental and Clinical Research
International Scientific Literature, Inc. 361 Forest Lane, Smithtown, NY 11787, USA

Tissue Engineering
Mary Ann Liebert, Inc., 140 Huguenot Street, 3rd floor, New Rochelle, NY 10801-5215

Journal of Material Science: Materials in Medicine
Springer Publishing, 15th floor, Salmon Tower Midtown Manhattan, New York City, NY

METAL OXIDE AND POLYMER-CONTROLLED DELIVERY SYSTEMS, SUNSCREENS, TREATMENTS, AND TOPICAL COATING APPLICATORS FOR ANTIFUNGAL AND ANTIMICROBIAL AGENTS
Publication number: 20210100991
Abstract: A dose applicator for preparing a mixture at a point of use includes a housing defining an interior and an opening. First and second ampoules are contained in the interior, wherein the first ampoule contains a first component and the second ampoule contains a second component comprising one or more antifungal agent. An applicator tip is secured in the opening so that when the first and second ampoules are broken, the first and second components mix to form the mixture and the mixture can egress from the application tip.
Type: Application
Filed: September 17, 2020
Publication date: April 8, 2021
Inventor: John D. Jarrell

METAL OXIDE AND POLYMER CONTROLLED DELIVERY SYSTEMS, SUNSCREENS, TREATMENTS AND TOPICAL COATING APPLICATORS
Publication number: 20200282195
Abstract: Systems and methods for keeping various compounds stable in different ampoules in an applicator. Upon breaking open the ampoules, the compounds are mixed and applied. In one embodiment, the resulting mixture is a long lasting waterproof sunscreen for use on skin. In another embodiment, the resulting mixture applied one or more coatings to an article and may subsequently accomplish sustained release and/or transdermal delivery of a therapeutic.
Type: Application
Filed: May 20, 2020
Publication date: September 10, 2020
Inventor: John D. Jarrell

METAL OXIDE AND POLYMER CONTROLLED DELIVERY SYSTEMS, SUNSCREENS, TREATMENTS, AND TOPICAL COATING APPLICATORS
Patent number: 10668259
Abstract: Systems and methods for keeping various compounds stable in different ampoules in an applicator. Upon breaking open the ampoules, the compounds are mixed and applied. In one embodiment, the resulting mixture is a long lasting waterproof sunscreen for use on skin. In another embodiment, the resulting mixture applied one or more coatings to an article and may subsequently accomplish sustained release and/or transdermal deliver of a therapeutic.
Type: Grant
Filed: October 21, 2016
Date of Patent: June 2, 2020
Assignee: Materials Science Associates, LLC
Inventor: John D. Jarrell

METAL OXIDE AND POLYMER CONTROLLED DELIVERY SYSTEMS, SUNSCREENS, TREATMENTS, AND TOPICAL COATING APPLICATORS
Publication number: 20170165462
Abstract: Systems and methods for keeping various compounds stable in different ampoules in an applicator. Upon breaking open the ampoules, the compounds are mixed and applied. In one embodiment, the resulting mixture is a long lasting waterproof sunscreen for use on skin. In another embodiment, the resulting mixture applied one or more coatings to an article and may subsequently accomplish sustained release and/or transdermal delivery of a therapeutic.
Type: Application
Filed: October 21, 2016
Publication date: June 15, 2017
Inventor: John D. Jarrell

METHOD OF MAKING A COMPOSITE FROM METAL OXIDE AND POLYMER PRECURSORS

Patent number: 8080223
Abstract: A method of making a composite from a composition including a metal oxide precursor and polymer precursor by exposing the metal oxide precursor to a gas having a humidity level of about 40% to about 70% for at least about one hour.
Type: Grant
Filed: October 17, 2008
Date of Patent: December 20, 2011
Assignee: Biointraface, Inc.
Inventors: John D. Jarrell, Jeffrey R. Morgan

COMPOSITION INCLUDING METAL OXIDE AND POLYMER

Publication number: 20110092870
Abstract: Novel compositions, as well as related methods, coatings, and articles, are disclosed.
Type: Application
Filed: December 21, 2010
Publication date: April 21, 2011
Applicant: Biolntraface, Inc.
Inventor: John D. Jarrell

COMPOSITION INCLUDING METAL OXIDE AND POLYMER

Patent number: 7868078
Abstract: Novel compositions, as well as related methods, coatings, and articles, are disclosed.
Type: Grant
Filed: October 17, 2008
Date of Patent: January 11, 2011
Assignee: Biointraface, Inc. a Rhode Island Corp.
Inventor: John D. Jarrell

NOVEL COMPOSITIONS AND RELATED METHODS, COATINGS, AND ARTICLES

Publication number: 20090104473
Abstract: Novel compositions, as well as related methods, coatings, and articles, are disclosed.
Type: Application
Filed: October 17, 2008
Publication date: April 23, 2009
Inventors: Jeffrey R. Morgan, John D. Jarrell

NOVEL COMPOSITIONS AND RELATED METHODS, COATINGS, AND ARTICLES

Publication number: 20090105384
Abstract: Novel compositions, as well as related methods, coatings, and articles, are disclosed.
Type: Application
Filed: October 17, 2008
Publication date: April 23, 2009
Inventors: Jeffrey R. Morgan, John D. Jarrell

NOVEL COMPOSITIONS AND RELATED METHODS, COATINGS, AND ARTICLES

Publication number: 20090104095
Abstract: Novel compositions, as well as related methods, coatings, and articles, are disclosed.
Type: Application
Filed: October 17, 2008
Publication date: April 23, 2009
Inventors: Jeffrey R. Morgan, John D. Jarrell

VISUALIZATION OF BACTERIAL COLONIZATION AND BIOFILM FORMATION ON ORTHOPAEDIC TRAUMA EXPLANTS

Publication number: 20160370367
Abstract: Detection and quantification of microbial colonization and biofilm formation on orthopaedic explants would be important for deciding treatment interventions at the time of surgery. Methods and Systems for such treatments are shown that utilize various steps and kits to quickly generate confocal laser-scanning microscopy (CLSM) images to allow for the detection and quantification. The explants are prepared by applying antibodies of both gram-positive and grain-negative for at least one period of time.
Type: Application
Filed: December 17, 2015
Publication date: December 22, 2016
Applicant: RHODE ISLAND HOSPITAL
Inventors: Dioscaris Garcia, Christopher T. Born, John Jarrell

VISUALIZATION OF BACTERIAL COLONIZATION AND BIOFILM FORMATION ON ORTHOPAEDIC TRAUMA EXPLANTS

Patent number: 10352933
Abstract: Detection and quantification of microbial colonization and biofilm formation on orthopedic explants would be important for deciding treatment interventions at the time of surgery. Methods and Systems for such treatments are shown that utilize various steps and kits to quickly generate confocal laser-scanning microscopy (CLSM) images to allow for the detection and quantification. The explants are prepared by applying antibodies of both gram-positive and grain-negative for at least one period of time.
Type: Grant
Filed: December 17, 2015
Date of Patent: July 16, 2019
Assignee: Rhode Island Hospital
Inventors: Dioscaris Garcia, Christopher T. Born, John Jarrell

ADDITONAL TRAINING

NAMSA Remote Training Series on ISO 10993 "Biological Evaluation of Medical Devices"
Part 1: Evaluation and testing in the risk management process (September 17, 2014)
Part 3: Tests for genotoxicity, carcinogenicity and reproductive toxicity (October 1, 2014)
Part 4: Selection of tests for interactions with blood (October 15, 2014)
Part 5: Tests for in vitro cytotoxicity (October 29, 2014)
Part 6: Tests for local effects after implantation (November 12, 2014)
Part 7: Ethylene oxide sterilization residuals (December 3, 2014)
Part 10: Tests for irritation and delayed-type hypersensitivity (December 17, 2014)
Part 11: Tests for systemic toxicity (December 30, 2014)
Part 12: Sample preparation and reference materials (January 14, 2015)
Part 17: Establishment of allowable limits for leachable substances (January 28, 2015)
Part 18: Chemical characterization of materials (February 11, 2015)

Certifications and Continuing Educational Credits

Adult Ventilation Management (Corexcel, CE 7.90 hr Nursing, 1-2018)

Electrosurgery; Best Practices for Electrosurgery (Pfiedler Enterprises, 4hr CE, 2016)
Electrosurgery CE Module (Valleylab, Institute of Clinical Education)

Hazardous Waste; Laboratory Safety; Biological Safety and Blood Borne Pathogens; Emergency Action Plan (Renewed 2019); Biosafety Training (2006-19); Hazardous Waste Training Classroom (2004-19); (Brown University)

Human Participant Protections Education for Research Teams (National Institutes of Health),
CITI Course in The Protection of Human Research Subjects (07')

Asbestos Awareness Training, In Accordance with Federal OSHA and EPA Regulations, 29 CFR 1910.1001 for General Industry; 29 CFR 1915.1001 for Maritime; 29 CFR 1926.1101 for Construction; and 40 CFR Part 763 Subpart G for certain State and local government employees who are not protected by the Asbestos Standards of the Occupational Safety and Health Administration (OSHA). (Safety Unlimited 2hr CE, 2019)

RESEARCH & CONSULTING CONTRACTS

US Department of Justice 7/1 /201 1 6/29/2012 $23,850.50
United States Attorney's Office
Thomas H. Barnard, Esq.
36 S. Charles Street, 4th Floor
Baltimore, Maryland 21201
Contract 11 W-USA37-0090
Expert Consultant on behalf of the US. Aided defense counsel in a Medical Malpractice case involving a failed electro-surgical forceps used in a laparoscopic gynecological procedure, hysterectomy.

Airlift Research Foundation (Sub-award) 1/1/2010-1/1/2012 $101,863
In Vitro Optimization and Large Animal Study of Anti-infective, Bioactive Intramedullary (IM) Nails: This project involves a two year multi-disciplinary effort, optimizing promising nano-technology hybrid surface treatments and applying them fracture fixation implants were are exposed to drug-resistant bacteria and placed in large animals. There is twelve months of *in vitro* work to measure the responses of human cells and bacteria to a series of nano-scale surface treatments, metal oxides and polymer hybrids. This is followed by *in vivo* testing of bacterial inoculated bone screws in a large animal model during the second year. Our goal is to find and test the next generation of bioactive surfaces that actively inhibits bacteria biofilm formation and maximizes bone growth and fracture repair. The animal study is a necessary part of the pre-clinical process leading to an approved human study. A favorable outcome from this pre-clinical research is intended to lead to an FDA approved follow-up clinic study.

Orthopaedic Trauma Research Fund 1/1/2009-7/1/2010 $188,462
Rhode Island Hospital
Providence, RI/USA
A Bicortical Half Pin Mini-pig Model to Evaluate New Bio-interfaces: This project involves coordinating a multi-discipline approach to the development of large animal models for evaluation the tissue integration and antimicrobial properties of novel biomaterials developed for internal and external fixation devices and bone integration and skin attachment to transcutaneous osseointegrated devices for prosthetic attachment and the treatment of segmental bone defects. A roundtable approach is taken, involving trauma research clinicians, biologists and engineers from academics, hospitals and industry. A high throughput in vitro screening approach is used to validate coating compositions with optimized antimicrobial, cell proliferative and adhesive properties and applied to stainless steel, titanium alloy and composite implants.

VA24-P-0464 (Contract Consultant) 2/1/08-12/30/08 $104,000
Department of Veterans Affairs
VMAC, Providence, RI/USA
Study: Bone and Skin Attachment for Prosthetic Attachment: This is an investigation of bone integration and skin attachment to transcutaneous osseointegrated devices for prosthetic attachment and treatment of segmental bone defects. The goal is a combine device for use in the repair of traumatic injuries. Biomaterials, device design and surgical approaches are coordinated between multiple disciplines, Biology, Medicine and Engineering nano technology, to address the need for implants which improve healing of segmental bone defects, osseointegration, soft tissue sealing, while preventing infection. A high throughput in vitro screening approach is used to determine coating compositions with optimized antimicrobial, cell proliferative and adhesive properties and applied to titanium alloy and composite implants. Developed small and large animal models.

John D. Jarrell, PhD, PE

TRIALS, DEPOSITIONS AND ARBITRATIONS

Trials

05/10-11/2018	Cavanaugh v Stryker, Case No. 2013CA001800 (Neptune, waste mgnt)	Cir. Court, 19th circuit, St. Lucie, FL Firm: SEARCY DENNEY SCAROLA BARNHART
08/01/2016	Galue v. Independence 270 Madison, et al. Index: 303246/2011 (Biomechanical/workplace injury claim)	Supreme Court of NY, County of Bronx Firm: Martin Clearwater & Bell LLP
11/12/2015	Robyn Christiansen v. Wright Medical (Conserve MoM hip, MDL NO. 2329)	US District Court, Northern Dist of Georgia Firm: Pope, McGlamry, Kilpatrick, Morrison & Norwood
08/24/2006	Estate of Joseph W. Niemczura (Metal oxide formation on Cu pipe)	Hampden County Probate Court
04/07/2005	Frances Lavita v. Charles Wright, M.D. (Stainless steel surgical skin staples/nickel allergy)	Middlesex Superior Court, MA
09/16/2003	Maxner v. Cosco (Battery operated electronic device)	Seattle, WA
05/24/2000	Saied Kashani v. Mercedes (Uniblade & windshield system)	San Diego, CA
10/05/1999	Torchia v. Van Dorn Demag, (Injection molding equipment failure)	Rochester NY
07/20/1992	Hatara v. Turner Cooper Tools, Division of Cooper Industries, Inc. (propane/MAP tank explosion)	US District Court of MA

Depositions

02/27/2025	LUCAS, et al., v UKHA, LivaNova Heater Cooler Unit, Case 2020-CV-000310	Dis. Court of Wyandotte County, KS, 29th Judicial Dis. Firm: Humphrey, Farrington & McClain, P.C
09/17/2024	Vestakis v LivaNova Heater Cooler Unit, Case 22STCV29073	Superior Court of CA, LA Central District Firm: Vaage Law
06/22/2023	Orthobond Corp. v Molecular Surfaces Technology (Trade Secrets, Civil Action No. 3:22-cv-00217)	US Dist. State Court, Dist. Of New Jersey Firm: Seth Boeshore, Esq. | Venable LLP
12/07/2022	Cohen v. Boston Scientific, Republic Surgery (Greenlight Laser, 1:20-CV-00943)	US Dist. State Court, Dist. Of New Hampshire Firm: JORDAN HERRINGTON & ROWLEY
04/12/2022	Lile v. Turpen, Ethicon Endo, J&J (Endo stapler, 15-CI-00315)	Commonwealth of KY Barren Cir. Court, Division 1 Firm: O'Bryan, Brown & Toner
03/20/2022	Koga v. Liva Nova (T3 Heater Cooler; Case: 19STCV28954)	Superior Court CA, LA, Central District Firm: Atlee Hall, LLP
10/27/2021	Rouviere v Stryker / Depuy (MDM X3 Hip Implant; 1:18-cv-04814-LJL-SDA)	US District Court, South. Dist. NY Firm: GODOSKY & GENTILE, P.C.
06/09/2021	Angela Mayle v. Wright Medical (Conserve MoM hip, 2:19-cv-13011-MAG-RSW)	US District Court, East. Dist., MI, Ann Arbor Division Firm: Jones Ward PLC
08/20/2019	Winston Ramkelawan v. Globus Medical (Spinal implant, 5:18-cv-100-Oc-30PRL)	US Dist. Court, Middle Dist. Fl., Ocala Division Firm: Morgan & Morgan
08/16/2019	William Meskil v. CBS Corp., et al. No. 19-2-02622-7 SEA (Navy asbestos exposure)	Superior Court of WA, King County Firm: SCHROETER, GOLDMARK & BENDER
06/06/2019	Robert Noyes v. Air & Liquid Systems, et al. No. 18-2-56024-1 SEA (Navy asbestos exposure)	Superior Court of WA, King County Firm: SCHROETER, GOLDMARK & BENDER
05/17/2018	McAnneny v Smith & Nephew Civil Action No. 3:17-cv-00012 (AWT) (BHR hip)	US District Court, District of CT Firm: Law offices of Andrew J. Pianka, LLC
01/11-18/2018	Cavanaugh v Stryker, Case No. 2013CA001800 (Neptune, waste mgnt)	Cir. Court, 19th circuit, St. Lucie, FL Firm: SEARCY DENNEY SCAROLA BARNHART
11/13/2017	Keith Cavanagh v Bio-Dynamics, Coolsystems 3:14-CV-01938-SRU (Medical cold/compression)	US District, Court, District of Connecticut Firm: Koskoff, Koskoff & Bieder, New Haven, CT
06/29/2017	Estate of Marsha Jane Snider v Wright Medical No. 15-C-464-3 (Metal on Metal hip implant)	Circuit Court of Harrison County, WV Firm: Saunders & Walker, PA, Pinellas Park, FL
09/30/2016	Estate of Beth Ann Kelly v Mylan, et al. No. 2:12-cv-11684-PDB-RSW (pain patch)	US District Court, E. Dist. of Michigan, S. Div. Firm: Angwin Law Firm
03/24/2016	ELI LILLY AND COMPANY, v PERRIGO	US District Court, N. Dist. of IL, E. Div

	Case. 1:13-CV-0851 SEB-MJD (Transdermal delivery of Testosterone & Applicator)	Firm: RAKOCZY MOLINO MAZZOCHI SIWIK LLP
2/18/2016	BIOMEDICAL ENTERPRISES, INC. v. SOLANA SURGICAL, LLC, et al., , Civil No. 1:14-cv-00095-LY (Nitinol Bone Staples)	US District Court, Western Dist. of Texas Firm: Fish & Richardson
02/11/2016	FORSTA AP-FONDEN AND DANSKE INVEST MANAGEMENT AS v. ST. JUDE MEDICAL, et.al. Civil No. 12-3070 (JNE/HB) Class Action	US District Court, District of Minnesota Firm: Motley Rice LLC, Mt. Pleasant, SC
10/15/2015	Barbara Tucker v. Wright Medical Tech., Inc Case No. BC575110 (Metal on Metal hip implant)	Superior Court, CA, La County Firm: Kiesel Law LLP
08/11/2015	Bayer HealthCare Pharmaceuticals Inc., Bayer Pharma AG, and Bayer OY ("Bayer") MIRENA® LITIGATION, CASE NO. 297, MASTER DOCKET NO.:BER-L-4098-13	Superior Court of NJ, Bergen County Firm: Parker Waichman LLP
05/05/2015	Raymond Uribes v. BASF, Horn Co (Bondo) (Release of Asbestos from Polyester ABF)	Superior Court, CA, Santa Clara Firm: Waters Kraus & Paul, El Segundo, CA
12/30/2014	Robyn Christiansen v. Wright Medical (Conserve MoM hip, MDL NO. 2329)	US District Court, Northern Dist of Georgia Firm: Pope, McGlamry, Kilpatrick, Morrison & Norwood
11/04/2014	Teresa Hilliard v C.R. Bard (Avaulta Plus Mesh, MDL NO. 2187)	US District Court, Southern Dist.WV, Charleston Div. Firm: Harrison Davis Steakley Morrison, P.C.
11/04/2014	Cynthia Robinson v. C.R. Bard (Align Mesh, MDL NO. 2187)	US District Court, Southern Dist.WV, Charleston Div. Firm: The Lanier Law Firm, PLLC
10/13/2014	Glenny. Pichardo v. CR Bard (IVCF Recovery fracture)	US District Court, Southern Dist of NY Firm: Burns & Harris, Esqs
08/15/2013	Tim Courson v. Wright Medical (Failed Ti modular hip neck)	US District Court, Middle Dis Georgia, Macon Div. Firm: Fortson, Bentley and Griffin, P.A.
07/23-24/2013	Kilgore v. Synthes (failed titanium spinal implants)	US District Court, Southern Georgia, Augusta Div Firm: Blasingame, Burch, Garrard & Ashley
06/24/2013	Steven Brown v. Snook, et. al. (Duraform Bovine collagen in spinal surgery)	5th Dist Court, Washington County, Utah Firm: Aaron J. Prisbrey, PC
05/08/2013	Penn Chiro. v. BCBSBA (Spinal traction, roller table, massage chair)	US District Court, N. District of IL, E. Div. Firm: McDermott Will & Emery LLP
02/07/2013	Chad Boatman v. Synthes, et. al. (Orthopaedic wrist screws)	District Court, Orange County, TX Firm: Provost Umphrey Law Firm
11/13/2012	Carpenter v American Medical Systems (AMS monarch transvaginal mesh)	Superior Court, CA, County of San Bernardino Firm: Albertson & Davidson, LLP
05/08/2010	Cole v. LDR Holdings, et. al. (New design spinal fusion implant)	District Court, Smith County, TX Firm: Martin Walker, PC
04/16/2010	Jennings v. Alsager, et al. (Duragesic, fentanyl reservoir pain patch)	Superior Court, WA, King County Firm: Heygood, Orr, Pearson
04/02/2010	Auburn v. Johnson & Johnson, Alza, et al. (Fentanyl reservoir pain patch)	Superior Court, CA, County of Sacramento Firm: Heygood, Orr, Pearson
02/05/2009	D.A. West v. Alza Corp (Fentanyl laminated reservoir pain patch)	Distr. Court, Trinity County, TX Firm: Heygood, Orr, Pearson
11/23/2004	Delbrook v. Aescualp, Inc. (Stainless steel surgical ronguer)	Superior Court of WA, King County
04/01/2004	FV Western Hunter-Casco Bay Diesel (Marine transmission & converter)	Providence, RI
02/05/2004	Dixie Smith (Class Action) v. AllState (Automotive sheet metal parts, fabrication and safety)	
08/19/2003	Maxner v. Cosco (Battery operated toy)	Seattle, WA
05/22/2003	Cecil E. Dodson v. Ford Motor Company (Electrical switch/auto fire)	RI Superior Court
05/16/2001	Serdin v. USSC, Kaiser Foundation Hospitals (Attorney: Patrick Emery, medical stapler)	Superior Court, CA County of Sonoma
05/23/2000	Saied Kashani v. Mercedes (Uniblade & windshield system)	San Diego, CA
05/1999	ME-92 v. Smith Nephew	Memphis, TN

	(Medical grade surface coating for stainless steels)	
10/21/1998	Turchiano v. Howmedica (Spinal implant failure)	US District Court of NY
05/1992	Hatara v. Turner Cooper Tools, Division of Cooper Industries, Inc. (Propane/MAP tank explosion)	US District Court of MA

Arbitrations

02/22/2011	Eric Grabowski v Kaiser Foundation; Shaieb, MD (PEEK Shoulder Anchor)	Hawaii
07/2005	Travel leather, Peabody Mass v. Hartford Steam Boiler (Stainless hot water tank, BINGHAM MCCUTCHEN LLP)	Boston, MA

Evidentiary Hearing

06/26/2024	Cohen v. Boston Scientific, Republic Surgery (Greenlight Laser, 1:20-CV-00943)	US Dist. State Court, Dist. Of New Hampshire Firm: JORDAN HERRINGTON & ROWLEY Judge Paul Barbadoro

REFERENCES

Dr. Jeffrey R. Morgan	Co-Director, Graduate Program in Biomedical Engineering Associate Professor of Medical Science and Engineering Department of Molecular Pharmacology, Physiology, and Biotechnology Brown University, G-B 393, Biomed Center 171 Meeting Street, Providence, RI 02912 Phone (401) 863-9419 jeffrey_morgan@brown.edu
Dr. Christopher T. Born, MD	Director of Orthopaedic Trauma, Rhode Island Hospital 2 Dudley Street, Suite 200, Providence, RI 02905 Professor of Orthopaedic Surgery, The Alpert Medical School of Brown University Providence, RI 02912 Phone (401) 457-1562 christopher_born@brown.edu
Jack Walker, Esq.	Martin Walker, PC (Orthopaedic Implants) 522 S. Broadway, Suite 200 Tyler, Texas 75702 Phone (903) 526-1600 jwalker@martinwalkerlaw.com

TERMS AND CONDITIONS OF AGREEMENT

CHARGES: Work performed under a fixed-price arrangement will be billed at the agreed fixed amount. Work performed on a time-and-expenses basis will be charged in accordance with the most current Schedule of Rates & Charges of Materials Science Associates, LLC ("MSA"). Any unusual work not specifically covered by that schedule will be charged at a rate mutually determined to be reasonable in relation to the type of work to be performed.

At the discretion of MSA, a suitable retainer shall be required from the client in advance of starting a case or project. At the discretion of MSA, additional suitable retainers shall be required from the client in advance of scheduling or continuing additional work on a project, such as the retaining and use of additional consultants, travel, inspections, preparation and testimony at depositions and trials. All retainer fees and prepayment fees paid are non-refundable.

Evidence storage and disposal of cases file will be the responsibility of the client. Upon the client's request, MSA may agree to provide temporary storage space for a reasonable fee, which the client agrees to pay monthly fees upon presentation of an invoice from MSA.

Taxes will be charged where applicable.

PAYMENT: Invoices are typically rendered weekly or in accordance with the agreed upon payment schedule, and are due upon receipt. Outstanding balances past due over 30 days are subject to a 1.5% delinquency charge until paid. MSA, without liability, may withhold delivery of reports and other data, and may suspend performance of its obligations to the client, pending full payment of all charges. MSA reserves the right to decline further work with any client delinquent in payment of charges due to MSA for previous work, until such balances are paid in full.

EXECUTION OF SCOPE OF SERVICES: MSA will work in accordance with generally accepted professional engineering and medical analysis practice. No other warranty, express or implied, is made concerning work performed under the agreement, including MSA's findings, recommendations, specifications, or professional advice.

MSA will diligently proceed with the contracted work and report to the client in a timely manner, except for delays occasioned by factors beyond MSA's control, by factors that were not reasonably foreseeable, or by factors initiated by the client.

Work under the agreement will be terminated upon receipt by MSA of written notice from the client, except that MSA may complete such analyses, records, and reports as are reasonably necessary to adequately document the work performed through termination. Charges for such work will be kept to a reasonable minimum not exceeding 10% of total charges incurred through the date of termination. Work under a fixed-price agreement is non-refundable. Work under the agreement may be terminated by MSA only for just cause. This includes, but is not limited to: development of a material conflict of interest, judicially required participation in onerous discovery or other legal process outside the intended scope of the work, or the presence of circumstances beyond MSA's control, such as natural disasters or government intervention.

MSA, unless other specific arrangements are made, will maintain its technical files for 30 days after the final payment is received and the case file is closed. Financial records will be retained according to I.R.S. requirements, but not less than one year after the case file is closed.

HOLD HARMLESS AND INDEMNIFICATION: The client assumes full and complete responsibility for all uses and applications of MSA's recommendations, or work under this agreement, or failure to use recommendations or work, and agrees to indemnify and hold harmless MSA, its affiliates, officers, directors, employees, agents, and stockholders against any and all liability, damages, losses, claims, demands, actions, causes of action, and costs including attorney's fees and expenses resulting from the death or injury to any person or damage to any property or any other alleged or actual damages resulting from the aforementioned use, application, or nonuse of MSA's recommendations or work under this agreement.

The client agrees that in no event shall MSA, its affiliates, officers, directors, employees, agents, or stockholders be liable for any incidental or consequential damages, direct or indirect, arising from MSA's services under this agreement.

MSA will hold in strictest confidence all proprietary information and trade secrets of the client to which it may be given access. Unless otherwise expressly agreed in writing, all reports, recommendations, procedures, and other information provided to the client under this agreement shall be joint property of the client and MSA, and may be used without restriction by either. However, unless otherwise expressly agreed in writing, MSA shall retain exclusive rights to all proprietary information, technologies, trade secrets, inventions, or patentable ideas developed during the performance of this agreement.

In any litigation involving the client in which MSA is compelled by subpoena or court order to testify at a deposition or judicial proceeding, or to produce documents regarding work performed by MSA, the client agrees to compensate MSA, at its prevailing hourly rate, for all time spent by MSA in responding to such legal process, including all time spent in preparing for such testimony. The client also agrees to pay MSA's reasonable attorney's fees and expenses included in connection with the foregoing. In the event of any such subpoena or court order, MSA will promptly notify the client to enable the client to object to any such testimony or production of documents.

In the event of a lawsuit between the client and MSA under this agreement, such lawsuit shall be filed and tried only in a court of competent jurisdiction within the State of Rhode Island. Rhode Island law shall apply to any such proceeding.

*M*ATERIALS *S*CIENCE *A*SSOCIATES, LLC
Remit to: 1372 Main Street, Coventry, RI 02816
Cell: (401) 290-8823 TF: (800) 672-6721 email: info@materialsscience.org

SCHEDULE OF RATES & CHARGES

PROFESSIONAL FEES

The staff of Materials Science Associates, LLC comprises highly qualified professionals: both employees and consultants. MSA charges its clients for services provided according to the skill level of the individual assigned to the client's project. For billing purposes, MSA provides the following staff classifications that designate relative experience, training, and accomplishment within a technical field together with the range of standard hourly fees charged for their services.

PROFESSIONAL SUPPORT:
Engineering & Medical Analysis, Site Inspections, Travel and Expense

Dr. John D. Jarrell, PhD, PE

Travel	$1600/hr
Inspections & Analysis	$1600/hr
Depositions (prepayment, Min. 6 hours paid in advance)	$1600/hr
Trials (prepayment, Min. 8 hours paid in advance)	$1600/hr

***Non-refundable initial retainer fee to retain promise of availability for analysis: $19,200**

Associates

Travel	$695/hr
Inspections & Analysis	$695/hr
Depositions (prepayment, Min. 6 hours paid in advance)	$795/hr
Trials (prepayment, Min. 8 hours paid in advance)	$795/hr

Surgeons & Specialists

Travel (limited availability)	quote
Analysis & Review	quote
Depositions (prepayment, Min. 6 hours paid in advance)	quote
Trials (prepayment, Min. 8hours paid in advance)	quote

***Non-refundable initial retainer fee to retain promise of availability for analysis, quoted per case and expert.**

Lab Technicians	$350-650/hr
Case Managers, Case Management and Evidence Management	$650/hr
Support Staff, Administrative Services and case support	$350-650/hr

***Initial retainer fees are non-refundable, as well as advance prepayments required for depositions & trials and scheduled preparation and travel.** Retainer fees are to secure the experts promise of "availability" to work on a case independent of services performed. Refunds are not given under any circumstances, including cases that settle before work is performed, settlements before an inspection or settlements before issuance of a report, deposition or trial. Our work, inspections and analysis time and expenses, however, are billed against the prepayments until it is depleted.

Cancellations made less than 10 days prior to travel for inspection, deposition or trial engagement are billed at 50%, and 100% for cancellations 72 hours or less in advance, with 8-hour minimum per day for cancelled air travel. Additional expenses, travel, supplies and rush services are billed separately from our rates.

We review records before invoices are sent out, and sometimes make adjustments to avoid a disparity between the time charges and the services rendered or the results achieved. We expect to write a report prior to deposition or trial testimony scheduling unless otherwise agreed upon in writing. Full payment of all retainers and invoices for services are required before the performance or scheduling of any travel, inspection, reporting, depositions or trials. The client agrees to inform expert when the case or matter is closed or settles. Storage fees for evidence and documents are charged separately. Expert shall have no duty to retain any documents, reports, evidence, transcripts, exhibits, e-mails, electronic files or other materials from the underlying legal matter for more than 30 (thirty) days following the termination of this agreement and may be destroyed.

The above hourly rates represent the professional fees charged by MSA for work performed within the continental United States. These rates are modified annually on or about January 1, or otherwise at the discretion of MSA. For projects conducted outside the continental United States, premium rates may be applied to adjust for cost-of-living differentials. Premium rates may also be applied when, at the client's request, work is to be accomplished in such a way as to increase costs to MSA. This

may occur due to schedule constraints or planned inefficiencies. Premium rates for this work shall be no less than 15% greater than the hourly rates quoted above. Payment is required in U.S. dollars within thirty (30) days after receipt of invoice, or 10% interest charges may be applied.

FIXED-PRICE SERVICES
When the services required, or the character of the final work product, are sufficiently defined, MSA may provide such services or deliverables on a fixed-price basis.

SPECIAL PROJECTS
Specialized software, methodologies, services, or technical products developed by MSA will be charged at rates that reflect development costs and equivalent technical value. Specific prices and terms of agreement will be provided upon request.

OTHER PROJECT EXPENSES
Air travel is charged at first class rates, or business class where available, and is invoiced to the client at MSA's cost. Air travel and hotel expenses are to be paid in advance by the client, or there is a 15% service charge added. Cancellations made by the client less than 10 days prior to travel are billed at 50% of cost, plus an 8-hour minimum day, and cancellations less than 72 hours prior to travel are billed at 100% of the costs, plus an 8-hour minimum day. Travel is billed portal-to-portal. Local mileage is charged in accordance with I.R.S. guidelines.

Understood and Agreed:

_____ _____
Signature Date

_____ _____ _____
Name Firm Address

*Prices and terms subject to change without notice. EIN# 26-4117410, CCR registered Federal contractor (DUNS:087605072)