

CRAIG M. ROSENBLUM

Biomaterials Engineer | Innovative Leader | Medical Devices | Research & Development

Results-driven biomaterials engineer and entrepreneur with a strong research foundation in materials science and biomedical applications. Demonstrated leadership skills in managing an interdisciplinary team across areas of new product and process design, development, validation, and launch. Award winning researcher well versed in materials characterization and mechanical testing evaluation. Proven track record in medical device field, specializing in dental, spinal, and orthopedic implants. Self-motivated with innate ability to utilize interpersonal skills and market knowledge to elevate organization performance. Business proficiencies span to include strategic marketing and global sales outreach.

- Operations & Project Management
- Process Development & Validation
- Engineering Design & Continuous Improvement
- Cross-Functional Team Building & Development
- Strategic Market & Business Plan Development
- Budget & Resource Management
- Statistical Analysis (Engineering & Sales Metrics)
- FDA/ISO/GMP/Regulatory Compliance

EDUCATION

The Johns Hopkins University, G.W.C. Whiting School of Engineering		Baltimore, MD
Master of Science	Materials Science & Engineering (3.84 GPA).....	2009 – 2010
	Thesis: Variations in the Mechanical, Chemical, and Microstructural Properties of Dental Enamel	
Bachelor of Science	Materials Science & Engineering, Concentration: Biomaterials (3.48 GPA).....	2005 – 2009

ENGINEERING & MANAGEMENT EXPERIENCE

Hitemco Medical Applications (Himed) Old Bethpage, NY
Provided innovative biomaterial solutions to medical and orthopedic customers around the world. Over thirty years in business and operating under Barson Composites Corporation, Himed is a global leader of calcium phosphate-based biomaterials. Three times promoted in function to lead executive role.

President.....2024 – Present

Vice President & General Manager.....2021 – 2023

- Staffed, managed, and strategized the efforts of the Engineering, Operations, Research & Development, and Sales functions.
- Generated visionary business plan to evaluate market needs, implement operational efficiencies, and jumpstart innovation for business growth and sustained success following COVID-19 pandemic recession.
- Managed all manufacturing production efforts including supply chain, procurement, staffing, and inventory.
- Strategized marketing initiatives resulting in the enhancement of company branding and global product positioning.

Engineering Manager, Manufacturing & Process Development.....2017 – 2021

- Directed team of engineers, research scientists, and lab technicians in the surface treatment of medical devices and production of novel calcium phosphate-based biomaterials.
 - Designed customizable MATRIX Dual® resorbable blast process for enhanced macro and micro surface morphology.
 - Managed development and completed design history file of hydroxyapatite whiskers via molten salt synthesis, used to reinforce PEEK spinal interbody fusion cages.
 - Headed process development and optimization of spherical hydroxyapatite powder via drop casting technique.
- Led capabilities study and manufacturing expansion of MCD Apatitic Abrasive (core biomaterial), resulting in 78% sales increase and production lead time reduction from 8 to 2 weeks.
- Streamlined engineering sales efforts and collaborated with domestic and international medical device manufacturers in the design of new dental and orthopedic implants compliant with ASTM, FDA, and ISO industrial standards.

Manufacturing & Process Development Engineer.....2015 – 2017

- Managed FDA 510(k) testing and submission for patented plasma spray titanium coatings in atmospheric conditions.
- Developed and executed verification/validation master plans (IQ, OQ, PQ), including protocols, reports, and FMEAs.
 - Discovered and validated a new titanium raw material supplier, resulting in a 57% annual cost reduction with no loss to product performance or regulatory impact.
- Launched new automated processes and process optimization studies, transitioning from concept to R&D to launch.
- Performed materials characterization and mechanical testing for new product and process developments.
- Designed custom machined medical device fixtures and related components using 3D CAD (SolidWorks).

The Johns Hopkins University, Department of Materials Science & Engineering Baltimore, MD

Research Engineer.....2008 – 2011

- Performed nanomechanical testing to characterize the hardness and stiffness of dental enamel as a function of location.
 - This groundbreaking research was the first to demonstrate the heterogeneous nature of enamel, as the mechanical properties were shown to vary by more than 100% from the apical end down to the dentin/enamel junction.
 - Explored the *intratooth*, *intertooth*, and *interspecies* variations across enamel of humans, monkeys, and unique species of significance to the field of anthropology and correlated to trends in chemistry and microstructure.
 - Collaborated with the Johns Hopkins School of Public Health and the Smithsonian Museum of Natural History.
- Performed bending flexural tests on Ni-Al reactive multilayer microtubes to characterize yield strength and modulus.
- Trained and mentored researchers on materials characterization techniques and analytical equipment.

BUSINESS & LEADERSHIP EXPERIENCE

Office of Residential Life, The Johns Hopkins University Baltimore, MD

Administrative Coordinator.....2012 – 2015

- Monitored and managed financial operations, including payments, external vendor transactions, procurement card expenses, and employee payroll in excess of \$500,000. Prepared budget projections. Proficient in SAP data entry.
- Generated meticulous reports and examined data analytics to measure division performance and evaluate effectiveness.
- Led training sessions for over 70 student leaders focused on teamwork, leadership, event planning, and graphic design.

Office of the Dean of Student Life, The Johns Hopkins University Baltimore, MD

Assistant Coordinator of Campus Programming.....2011 – 2012

- Coordinated daytime, evening, and weekend programs across all of campus and in Nolan's on 33rd Student Lounge.
- Recruited, trained, and directly supervised a team of 10 student managers to help execute campus wide events.

PROFESSIONAL ACHIEVEMENTS

Honors:

- **Community Manager – New York**, 3DHeals LLC (2023 – Present)
- **Advisory Board Member**, The Johns Hopkins University Materials Science & Engineering (2022 – Present)
- **Keynote Speaker**, The Johns Hopkins University Whiting School of Engineering Fellowship Dinner (2009)

Awards:

- **Excellence in Innovation Award**, BIOMEDevice Biotechnology Expo (2023)
- **John W. and Mary Lou Ross Fellowship**, The Johns Hopkins University Materials Science & Engineering (2009 – 2010)
- **Senior Design Engineering Award**, The Johns Hopkins University Materials Science & Engineering (2009)
- **Above and Beyond Leadership Award**, The Johns Hopkins University Residential Life (2008)

Certifications:

- **Internal Quality Auditor Training for ISO 13485 – Medical Devices**, Oriel Stat A Matrix – Credential ID 117646

INVITED PRESENTATIONS

October 2024	Advancements in Bioceramic 3D Printing with Calcium Phosphate <i>AM Ceramics, Hybrid</i>
September 2024	Career Discussion and Introduction to Himed <i>Long Island Chapter of ASM: The Materials Information Society, Centereach NY</i>
August 2024	3D Printed Orthopedic Implants <i>3DHeals LLC, Virtual</i>
June 2024	3D Printed Ceramics for MedTech: Multifeature Disruption <i>Additive Manufacturing Media, Virtual</i>
June 2024	Surface Treatment of Medical Devices: Enhancing Biocompatibility and Bioactivity <i>International Conference on Materials Science & Engineering 2024, Burlingame CA</i>
April 2024	The Great Variability of Hydroxyapatite: Exploring Different Forms and Unique Materials Engineering Applications <i>Ceramics Expo 2024, Novi MI</i>
April 2024	Mechanical Properties of Hydroxyapatite Coatings via Plasma Spray Deposition <i>Materials Research Society Meeting & Exhibit 2024, Seattle WA</i>
February 2024	3D Printing and AI in Orthopedics <i>3DHeals LLC, San Francisco CA</i>
January 2024	Senior Design Research – Career Discussion and Introduction to Himed <i>The Johns Hopkins University Department of Materials Science & Engineering, Virtual</i>
January 2024	Medical Device and Biotech Industry Professional Development Bootcamp and Trek <i>EN.580.156 Intersession Course – The Johns Hopkins University Life Design Lab, Virtual</i>
September 2023	Biomaterials Bioinks for 3D Printing <i>3DHeals LLC, Virtual</i>
May 2023	Post Processing of Additively Manufactured Titanium Medical Devices via MATRIX MCD® Apatitic Abrasive <i>RAPID + TCT 2023, Chicago IL</i>
February 2023	Senior Design Research – Career Discussion and Introduction to Himed <i>The Johns Hopkins University Department of Materials Science & Engineering, Virtual</i>
February 2023	The Materials Graduate Society (MGS) – Career Discussion and Introduction to Himed <i>The Johns Hopkins University Department of Materials Science & Engineering, Virtual</i>
October 2022	Post Processing for Healthcare 3D Printing <i>3DHeals LLC, Virtual</i>
November 2021	Pre-Dental Society – Career Discussion and Introduction to Himed <i>The Johns Hopkins University, Virtual</i>
October 2021	Senior Design Research – Career Discussion and Introduction to Himed <i>The Johns Hopkins University Department of Materials Science & Engineering, Virtual</i>
March 2021	Senior Design Research – Career Discussion and Introduction to Himed <i>The Johns Hopkins University Department of Materials Science & Engineering, Virtual</i>

CONFERENCES & EXHIBITIONS

- Additive Manufacturing Strategies, 2024
- Ceramics Expo, 2024
- International Conference on Materials Science & Engineering, 2024
- Materials Research Society Meeting & Exhibit (MRS), 2024
- American Academy of Orthopedic Surgeons Annual Meeting (AAOS), 2023 – 2024
- Medical Device & Manufacturing Expo (MD&M), East: 2015 – 2019, 2023, West: 2021
- North American Spinal Society Meeting (NASS), 2021, 2023
- RAPID + TCT, 2023
- Greater New York Dental Meetings (GNYDM), 2008 – 2022
- Society for Biomaterials Annual Meeting & Expo (SFB), 2022
- Orthopedic Manufacturing & Technology Expo (OMTEC), 2022
- BIOMEDevice Technology Expo, 2021
- International Pharmaceutical Expo (INTERPHEX), 2015 – 2017

RESEARCH PUBLICATIONS

- **C. Rosenblum** & E. Valiant. *Techniques to Enhance the Bioactivity of Polyetheretherketone (PEEK)*. BONEZONE/OMTEC White Paper, published by ORTHOWORLD®. 2024.
- **C. Rosenblum**. *MATRIX Dual® Expands Micro-Scale Morphology Potential of Orthopedic Implants*. BONEZONE/OMTEC White Paper, published by ORTHOWORLD®. 2021.
- **C. Rosenblum**. *Finishing 3D Printed Devices with MATRIX MCD® Apatitic Abrasive*. BONEZONE/OMTEC White Paper, published by ORTHOWORLD®. 2020.
- D. Lunking, G. Fritz, **C.M. Rosenblum**, S. Barron, T.P. Weihs. *Materials Characterization and Testing of Al/Ni-V Reactive Laminate Foils with Ni-V Cap Layers*. Manuscript prepared for Lawrence Livermore National Laboratory. 2011.
- **C.M. Rosenblum**, L.A. Darnell, W.V. Koenigswald, K.J.T. Livi, M.F. Teaford, T.P. Weihs. *Variations in the Mechanical and Chemical Properties of Water Vole (*Arvicola amphibius*) Molar Enamel*, in preparation for Amer J. Phys. Anthro. 2010.
- J. Chiang, **C.M. Rosenblum**, L.A. Darnell, K.J.T. Livi, M.F. Teaford, T.P. Weihs. *Variations in the Mechanical Properties of Capuchin Monkey (*Cebus*) Molar Enamel*, in preparation for Amer J. Phys. Anthro. 2010.
- B.S. Shah, T.R. Hricik, **C.M. Rosenblum**, M. Chen, I. Matushansky, J.J. Mao. *Growth Attenuation of Cancer Initiating Stem Cells by Doxorubicin-Conjugated Quantum Dots*. Tissue Engineering & Regenerative Medicine International Society. 2009.
- H. Do, T.R. Hricik, **C.M. Rosenblum**, M. Chen, B.S. Shah, I. Matushansky, J.J. Mao. *Cancer Stem Cell Growth is Attenuated by Doxorubicin-Conjugated Quantum Dots*. Journal of the William Jarvie Society, Columbia University Dental Medicine, 2009.
- B.S. Shah, I. Matushansky, K. Betz, T.R. Hricik, **C. Rosenblum**, J. Mills, J.J. Mao. *Quantum dots as cell tracking probes and drug carrier*. In Sitharaman B (Ed.) Nanobiomaterials CRC press/Taylor Francis group (Boca Raton, Florida, USA). 2009.

ACADEMIC ENGAGEMENTS

- Faculty-Student Interaction Campus Programming (2009 – 2011)
- Materials Research Society (2005 – 2010)
- Pre-Dental Society Financial Officer & Co-Founder (2008 – 2009)
- Relay For Life Fundraiser Co-Captain (2008 – 2009)
- Resident Advisor (2007 – 2009)
- Maryland Machine Shop (2006 – 2008)
- Engineering Business Office (2005 – 2008)
- Teambuilding Facilitator (2005 – 2007)

TECHNICAL SKILLS

Materials Characterization: Scanning Electron Microscopy (SEM) • Energy Dispersive X-Ray Spectroscopy (EDS) • X-Ray Diffraction (XRD) • Electron Microprobe • Surface Profilometry • Particle Size Analyzer

Mechanical Testing: Micro and Nanoindentation • Taber Abrasion • Tensile, Shear, and Fatigue Strength

Processing Expertise: Plasma Spray Coatings • Resorbable Blasting • Color Anodization • Powder & Abrasive Manufacture • Additive Manufacturing of Bioceramics • Calcium Phosphate Cast Shapes • Polymer Electrospinning