



Curriculum Vitae of ERIC MICHAEL SIMON

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Career Highlights

- ❖ Founder and Principal – President / Design Engineer – Dexterity Design: Product design and engineering services, prototyping, testing, pre-production services
- ❖ Founder and Chief Technologist – Acme Biosystems; R&D, production, and marketing of systems for 3-dimensional, high density, long-term culture of mammalian cells
- ❖ SwiftKey™ fastener – successfully conceived, prototyped, patented, marketed, and licensed product, currently licensed to MicroPlastics Inc.
- ❖ Co-Manager—Miniature Implantable Drug Delivery Systems Project (funded by Merck): Two patents issued; responsible for technical development, personnel management, budgeting, scheduling, reporting
- ❖ National Institute of Health SBIR Grant Principle Investigator—Fibrous Substrates for Cell Culture: First known use of polymeric electro-spun cell substrates and prelude to 3D scaffold culture
- ❖ Twenty-two patents issued & pending, including 4 pro se utility patents
- ❖ Numerous products designed, produced, and marketed

Experience

DESIGN ENGINEER / CONSULTANT

1995 to Present

Dexterity Design, Salt Lake City, Utah

- Product design and prototyping, engineering, testing and failure analysis, bridge to manufacturing
- Project management, market and patent research, expert witness services
- Focus on medical device, biotechnical, consumer, and recreational product sectors
- Recent and Current Projects:
 - ◆ Portable hand-held ventilator
 - ◆ Automated cell processing instrument with magnetic bead separation
 - ◆ DVT ultrasonic ablation system
 - ◆ Syringe aspiration accessory

- Prior Work: **Biosensors:** Nanopore proteomics, SPR proteomics, PCR rapid pathogen, TIRF Fluorescence; **Orthopedics:** Targetable needle-over-needle stem cell delivery (vertebral disc), ALIF Cage (vertebral fixation), T16 toe fixation implant and driver; **Dermatology:** Forced-air headlice treatment, LED- and Laser-based phototherapy, Micro-dermabrasion, Cellulite reduction; **Ophthalmic:** Topographic surface measurement for LASIK, Ophthalmic iontophoretic drug delivery; **Vascular:** Subclavian catheter sealing system; Bevel-tip cardiac catheter; Cardiac catheter incision closure, Venous blood pressure transducer; **Misc Med & Biotech:** Portable handheld ventilator, PCR hybridization automated wash, Ultrasonic probe, misc device enclosures, misc dental devices; **Non-Medical:** Ruggedized portable data-clock, Snowflake metrical instrument, Modular event canopy, Biometric time clock, Sport bottle, Modular crowd-control barrier, Drug-delivery port fluidic connector, Tool-less irrigation couplings, Modular climbing wall, Water-filled barriers, Pet toys, Sunglasses & ski goggles, Sport gloves.



**Experience
(continued)**



SR. SYSTEMS ENGINEER / MICROFLUIDICS SPECIALIST
Carterra, Inc., Salt Lake City, Utah

2018 to 2020

- Systems engineering, project management, constraint and risk analysis
- Design and implementation of milli- and micro-fluidic systems
- Design and implementation of proteomic biosensor instruments



FOUNDER / PRESIDENT / CHIEF TECHNOLOGIST
Acme Biosystems, Salt Lake City, Utah

2005 to Present

- Invention and development of advanced gas-permeable cell culture systems
- Project management, market research, patent prosecution
- Management and strategic planning

**Prior
Experience**

PROJECT ENGINEER / BIOMATERIALS SPECIALIST

Center for Engineering Design, Salt Lake City, Utah | Drug Delivery Devices, Cell Culture Systems, Micro Electromechanical Systems (MEMS), Abdominal Implants, Material and Design Consultation, Robotics, Technical and Grant Writing, Project Management

BIOMATERIALS / DEVELOPMENT ENGINEER

SynCardia Systems / Symbion Inc., Salt Lake City, Utah | Artificial Heart Devices and Instrumentation

ZAMBONI OPERATOR

Sun Valley Ice Center, Sun Valley, Idaho | Ice Sheet Maintenance and Refrigeration Systems

MANUFACTURING ENGINEER

American Medical Optics, Irvine, California | Intraocular and Contact Lenses

Education

Master of Engineering, Bioengineering, Biomaterials & Product Design, University of Utah
Bachelor of Science, Materials Science & Engineering, Biomaterials/Fabrication University of Utah
Mechanical Engineering / Premedicine, University of Michigan

**Legal
Experience**

(detailed history available upon request)

Expert Witness - 13 cases total

Patent Infringement / Invalidation / Breach of Confidentiality - 4 cases

Personal Injury / Medical Malpractice - 9 cases

- Invalidation of phototherapy device patent via IPR
- Infringement of gas-permeable cell culture device patents (litigation and IPR)
- Invalidation of blood separation device patent
- Infringement of specialty toothbrush and invalidation of patent
- Failure of eyeglass frame resulting in permanent eye damage to consumer
- Failure of embolic microspheres resulting in patient blindness and brain damage
- Failure of heparin infusion pump resulting in patient death
- Failure of implantable penile prosthesis (unrelated to prior case)
- Failure of conventional hip implant
- Failure of night light and subsequent hand injury
- Failure of custom implantable hip prosthesis
- Entanglement of hand in rotor assembly of vacuum blower
- Failure of implantable penile prosthesis

**Professional
Skills**

Project Management
Systems Engineering
Budgeting & Scheduling
Patent Review & Analysis
Proposal Preparation
Legal Expert Witness
Market Review & Analysis

Mechanical & Product Design
Prototyping / 3D Printing
CAD/CAE - SolidWorks
Design Review
Product Styling & Ergonomics
New Product Analysis
KOL Interaction

Surface Characterization
Materials Selection
Surface Modification
Molding & Fabrication
Manufacturing Analysis
Failure Modes Analysis
Risk Analysis

Product Scope	Drug Delivery Systems	Cardiovascular Devices	Ophthalmic Devices
	Fluidics and Microfluidics	Biosensors	Stem Cell Devices
	Cell Culture Products	Disposable Medical Products	Performance Apparel
	Percutaneous Access Devices	Dental Products	Micro Mechanisms/Sensors
	In Vitro Diagnostic Systems	Soft Goods	Device Enclosures/Housings
	Laboratory Products & Instruments	Sport Optics	Catheter-Based Devices
	Needle-based devices	Mounting Systems/Platforms	Instrument Subsystems
	Biomaterials Selection/Analysis	Recreational Products	Consumer Healthcare Products

Patents

Syringe Aspiration Accessory Device and Methods of Use (patent pending, US & EU Nat'l Phase)
 Cell Culture Apparatus and Associated Methods (8,486,692; pro se prosecution)
 Airflow Applicators and Related Treatment Methods (8,475,510)
 Container and Lid (US design patent pending)
 Airflow Attachment (D62687)
 Time Clock (D622168)
 Interlocking Barriers (7,275,888)
 Interlocking Barrier (D552,250)
 Detachable Clasp Fastener (6,243,922; pro se prosecution)
 Control Barrier with Rotatable Legs (6,676,113)
 Reusable Fluid Pressure Transducer Monitoring Apparatus (6,635,020)
 Method and System for Performing Microdermabrasion and Suction Massage (6,926,681)
 Method and System for Performing Microdermabrasion (6,582,442)
 Dermabrasion Handpiece (D451,196); Dermabrasion System (D450,842)
 Lens and Associatable Flow Cell (6,108,463 & 6,356,676 & 6,611,634; EP0928416;)
 Interlocking Control Barrier Systems (6,086,285)
 Waveguide Lens (D426,783)
 Teeth Cleaning Implement with Integrated Fluid Dispenser (5,642,994)
 Implantable Drug Delivery System with Piston Actuation (5,196,002 & 5,059,175)
 Multiple Vesicle Implantable Drug Delivery System (5,167,625)
 Disposable Toothbrush Cover (5,139,142; pro se prosecution)

Technical Reports

History of Aspiration Devices and Centrifugation Vessels
 History and Physics of Gas-Permeable Cell Cultureware
 Technical Brief: CELLUXE Gas-Permeable Cell Culture System
 Analysis of Metal Sintering System for Ti Toe Fixation Impants
 Thermal Block Production Methods for the Olympia PCR Instrument
 Site-Rite Clinical Evaluation Report
 Product Design Assessment: Defective Reading Glasses
 Findings: Pingle v. BioSphere Medical, Inc.
 Effects of a Magnetic Fluid Mixture on Cells Cultured in ACCS
 Ergonomic Analysis of Site-Rite Ultrasound Probe
 Failure of Implantable Penile Prosthesis
 Sealing System for a Long-Term Dialysis Catheter
 Tipping Analysis of Water-Filled Barrier
 Ophthalmic Electrode Materials Search
 Search Report: Tube and Pipe Fittings
 Manufacturing Feasibility for Production of Orlock™ Tubing
 Design Specification: Passive Cartridge v1.1
 Apollo™ Flashtube Chassis Design Verification

**Tech Reports
(continued)**

Prophyze™ DDPA Pros & Cons
Optimization of Waveguide Signal-To-Noise Ratio
Implant Testing of Butyrate Sheet Subjects to Static Cling Vinyl Labels
Incompatibility of Static Cling Vinyl Labels with Ski Goggle Lenses
Brittle Failure of Cellulose Propionate Sheet
Surgical Microscope Shield—Concept Design & Materials
Plastics Recommendations for Modular Cellular Telephone
Discussion of Goggle Spacer-Foam Adhesion Failure
L.L. Bean Lens Abrasion—Results of Optical and Physical Analysis
Sunglass Frame Materials—Comparison of Properties
Alternative Plastic Materials for High Performance Sunglass Frames
Analysis and Performance Testing of the Snap Fit Assembly of a Night Light
Materials Recommendations for Adjustable Ski Pole Clamp
Sunglass Frame Redesign—Fortified Lens Groove
Sunglass Lens Failure—Hardcoat Delamination
Goggle Face-Foam Adhesion—Interim Report
Coating Durability of Plastic Sunglass Lenses—QA Specification
Rutherford Backscattering Analysis of Mirror Lens Coatings
Summary of Findings—Baxter v. Cincinnati Fan
Injection Molding, Embrittlement, and ESC of Sunglass Frames
Materials for Encapsulation of Transcutaneous Energy Transmission System
Polycarbonate Thermal Lens Fogging
Process Control for Thermoformed Lens Production
Crazing of L.L. Bean Sunglass Lenses
Environmental Stress Crack Failure of Ventilator Cartridge Tubing Connector
Redesign of Ventilator Cartridge and Coupline
Miniature Implantable Drug Delivery System—Phase II Final Report
Historical and Technical Review of Drug Delivery Systems
NIH SBIR Phase I Final Report: Fibrous Substrates for Cell Culture
A Review of the FLEX Series Displacement Sensors
Electret Materials: Preparation By Corona Discharge and Electron Bombardment
Preparation of Teflon Fibers for Electret Materials
Electrostatic Spinning of Solution Polymers: Design and Surface Characterization
Surface and Bulk analysis of Biomer® Polyurethane in Explanted Artificial Hearts
Review of Surface Passivation Technologies for Blood-Contact Materials
Polish Formulation and Finishing Methodology for IOL and Contact Lens Production
Review of IOL Haptic Design

Proposals

Development of a Novel Bone Marrow Fractionation and Isolation Device
Development and Testing of High Performance Plate-Based Cultureware, NIH SBIR
Reliable Central-Nervous-System Interfaces, DARPA
Medical Diagnosis Platform for Category A and B Toxins and Inhalation Bacteria
Rapid Diagnostics Platform for Category A and B Toxins and Inhalation Bacteria
Investigation of the Effects of a Magnetic Fluid Mixture on Mammalian Cells
Advanced System for Routine Primary Hepatocyte Culture, NSF SBIR
Proposal for Design and Dev't of an Anesthesia Rebreathing Absorber Module
Ophthalmic Electrode Materials
Development and IP Review of a Micro-Dermabrasion System

**Proposals
(continued)**

Intermediate Waveguide: Overview and Development Budget
Design and Prototype of a Custom Photo Station for AMS
Design and Prototype of an Aesthetic Massage System
RFQ: Multibarrier 1B Finite Element Analysis
Test Fixtures for Fluorescence Immuno-Diagnostic System
Plastic Enclosure for the Genesis-2000 Dental Laser System
Disposable Dental Articulator
Electrical Connection System for pH Enteral Feeding Catheter
Dental Implant Surgical Guide
Double-Blade Biopsy Knife
Thermoformed Enclosure for Vibrotactile Tester
Plastic Enclosure for the AccuCure 3000 Dental Laser System
Materials & Analysis of Overmolded Ski Pole Grip
Determination of Lens Surface Temperature
Medical Device Introducer—Materials & Fabrication
Porcelain Dispensing System for Dental Fabrication
Heated Matched-Mold for Thermal Lens Production
A Pet Collar Drug Delivery System
MIDDS—University of Utah Biomedical Research Support Grant
Thermal Energy Generation from Palladium Hydrolytic Cells
MIDDS: A Miniature Implantable Drug Delivery System
Fibrous Substrates for Cell Culture, NSF SBIR
Fibrous Substrates for Cell Culture, NIH SBIR
Subcutaneous Peritoneal Access Device: Review of Potential Development Projects

Specifications

ABE Field Ventilator: Mechanical and Housing Specification
Gemini Protein Binding Biosensor
CURIOSITY G2 Wireless Earbuds: Assembly and QC Specification
Optical Module and Assembly for Crawling Robot
Stem Cell Delivery Device: Design and Product Specification
AcmeBio Test Plate: Rack + Lid Mold Specification
Thermaflux Product Development Specification
Design Specification: Site-Rite Ultrasound Probe Handle
Head Lice Treatment Device
Therapeutic Laser Handpiece Product Specification
TIRF Diagnostic Device Cartridge and Instrument
Portable Photo Booth Product Specification
Cellulite Reduction System Design Specification

**Business
Documents**

Syrasist™ Syringe Aspiration Accessory—Licensing Plan and Financial Analysis, in preparation
Celluxe™ Advanced Cell Culture Products—Business Plan and Financial Analysis, 2015
Quikey™ Rapid Key Link—Business and Licensing Plan and Financial Analysis, 1999
Calapso™ Drinkware Products—Business Plan and Financial Analysis, 1994
SportStax™ Production Financial Analysis, 1993
VersaGlove™ High-performance Gloves—Business Plan and Financial Analysis, 1991

Publications Gergely M, Shkurko K, Simon E. A Novel Technique for Automated Mass Measurements of Individual Snowflakes (AGU A23A-0177). Poster presented at: the American Geophysical Union Fall Meeting; 12-16 December 2016; San Francisco, CA.

Herron JN, Wang H-K, Tan L, Brown SZ, Terry AH, Durtschi JD, Simon EM, Astill ME, Smith RS, Christensen DA. Planar Waveguide Biosensors for Point-Of-Care Clinical and Molecular Diagnostics. In: Fluorescence Sensors and Biosensors (R. B. Thompson, Ed.). Marcel Dekker, New York, 2006. pp. 283-332.

Simon E. "Be Careful with the 'Custom' Device Exclusion," SCOPE, 2(1), February 1995, p. 6.

Citations Petrik, S, et al., Chapter: Functional Nanofibers for Sensors, In book: Electrospinning – Material Technology of the Future, 2022, IntechOpen: <https://www.intechopen.com/books/11127>.

Anstey A, et al., Nanofibrillated polymer systems: Design, application, and current state of the art. Prog. Polymer Sci, 113 (2020), Elsevier, New York, p. 2.

Chapter 10 - Electrospun Nanofibrous Filtration Membranes for Heavy Metals and Dye Removal, in Nanoscale Materials in Water Purification - Micro and Nano Technologies, 2019, Elsevier, New York, p. 5.

Marzioch, J, Microsensor System for the Metabolic Monitoring in Cancer Cell Culture, Doctoral Thesis, Albert-Ludwigs-Universität Freiburg im Breisgau, 2019, Ch. 3.1 Cell Culturing, p. 40.

Presentations Rapid IVD testing using Planar Waveguide Biosensors. Presented at Biodot Inc. St. Paul Workshop "Emerging Technologies to Enable Quantitative Rapid Tests". 23-25 June 2008. St. Paul Hotel, St. Paul, Minnesota.

Growing Better Cells for Science. Presented at the Wayne Brown Institute Deal Forum. 15 November 2006. Salt Lake City, Utah.

ACCS – Advanced Cell Culture System. Presented at HyClone Laboratories Inc. 29 March 2005. Logan, Utah.

Multiple Vessicle Implantable Drug Delivery Device. Presented to Merck Sharp & Dohme. March 2020. Center for Engineering Design, Salt Lake City, Utah.

Fluoropolymer-based Electret Materials. Presented to DARPA. July 1988. Center for Engineering Design, Salt Lake City, Utah.

Awards & Affiliations Intermountain Society of Inventors and Designers Society of Plastics Engineers
Intermountain Biomedical Association Utah Soc for Biomaterials Research (President, 1985)
College of Engineering Scholarship, U of Utah Regent's Scholarship, U of Michigan
Tau Beta Pi, Engineering Honor Society Phi Kappa Phi, National Honor Society

After Hours Inventing | Cooking | Road & Mountain Biking | Alpine & Nordic Skiing | Whitewater Kayaking