

RANDALL E. GORDON-GILMORE

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SUMMARY

Mechanical engineer experienced in the design and testing of laboratory instrumentation and computer peripherals from concept through production. Collaborates closely with other design disciplines—electronics, software, industrial design and manufacturing—and vendors.

PROFESSIONAL SKILLS

- Cost-effective design for various fabrication processes including injection molded, extruded, cast, stamped, sheet metal and machined parts. Parts reduction and functional consolidation. Materials selection for performance and environmental (biocompatibility, vacuum, wear) conditions.
- Design for efficient assembly and servicing.
- Knowledgeable in motion control, especially stepper-motor driven mechanisms.
- Proficient in SolidWorks (through 2008 release) part and assembly modeling (solids and surfaces), geometric dimensioning and tolerancing, change orders, drawing and assembly structure.
- Hands-on prototype fabrication, testing and modification.
- Work closely with vendors for mutually-beneficial solutions to fabrication and sourcing challenges.

EMPLOYMENT HISTORY

PROTOTRAINS Rio Vista, CA 2008 - Present
“Garage business”

Proprietor

- Small-scale manufacturing of machined components for model railroad and other hobby interests.
- Modified CNC milling machine, designed and built CNC retrofit for lathe, developed spray etching tank for making photoetched components.
- Prototyped and tested CPAP nose mask.
- Forum moderator and technical support for MeshCAM software.

CREATE TECHNOLOGIES, INC. Tracy, CA Apr. 2008 - Oct. 2008
Developer of new industrial technologies

Independent Contractor

- Worked with customers to develop initial product concepts for production.
- Maintained and operated waterjet cutting equipment in a prototyping/light production environment.
- Generated and optimized gcode programs to provide efficient cutting of polyethylene foam components for cost-effective production.
- Designed, fabricated and tested machine components and subassemblies.

BIO-RAD LABORATORIES

Hercules, CA

Apr. 2008 – July 2008

*Manufacturer of biotechnology instrumentation***Independent Contractor**

- Completed prototyping of new injection-molded chip cassette holder which I had designed while a permanent employee. Wrote mechanical verification test plan, tested components, and wrote test report.

BIO-RAD LABORATORIES

Hercules, CA

Nov. 1991 – Mar. 2008

*Manufacturer of biotechnology instrumentation***Senior Mechanical Engineer**

- ProteinChip SELDI mass spectrometry system
 - Designed new injection-molded cassette to improve chip handling and reduce machine jams.
 - Restructured calibration procedure for better workflow and stability of calibrations.
- Profinia protein purification instrument
 - Designed injection-molded housing on sheet metal structure with machined baseplate, utilizing the strengths and efficiencies of each process.
 - Utilized SolidWorks surfaces to generate housing components from master industrial design layout.
 - Designed housing for spill resistance and liquid-tight mounting of touch screen.
- ExQuest spot cutter
 - Designed precision-machined aluminum baseplate mounting X-Y mechanism, light table and microplate receptacles for maximum precision and reliability of sample handling.
 - Designed sheet metal and pressure-formed plastic housing to minimize cost while meeting appearance requirements.
 - Mounted camera on sub-structure independent of housing for vibration resistance.
 - Designed fiber-optic double-diffused backlight for even camera view illumination.
- BioFrac fraction collector
 - Integrated injection-molded upper and lower housings designed for spill resistance with extruded aluminum posts housing linear-force spring counterbalances for adjustable upper housing.
 - Designed X-Y stepper motor driven mechanism using a flex circuit—designed for maximum dynamic flex life—to tie all electronic components together.
- ReadyStrip filling and cutting machines
 - Designed rotary cutting head for X-Y-Z gantry table.
 - Designed vacuum cutting stage to repeatably hold flexible sheets for cutting to accurately-sized strips.
 - Wrote cutting programs in ISEL programming language.
- Ready Gel filling stations
 - Designed pneumatic indexing and filling stations to maintain microliter filling accuracy on acrylamide gel cassettes.
 - Wrote software to coordinate three dispensing pumps for accurate chemical mixing.
 - Designed workstations for efficient workflow to accommodate limited working time imposed by polymerization of dispensed gel.

BIO-RAD LABORATORIES (cont'd)

- DuoFlow UV optics module
 - Redesigned multi-piece housing into unitary machined aluminum block for optimal optics stability, uniformity of temperature and electrical shielding.

ZETA GRAPHICS CORPORATION Martinez, CA Feb. 1989 – June 1991
formerly **BRUNING COMPUTER GRAPHICS**
Manufacturer of pen plotters

Senior Mechanical Engineer

- Designed, prototyped, tested and modified existing and new pen plotters to meet performance, cost, and reliability requirements.

BIO-RAD LABORATORIES Richmond, CA Jan. 1986 – Feb. 1989
Manufacturer of liquid chromatography systems

Mechanical Engineer

- Isocratic and Gradient Analyzers
 - Designed a family of housings to package existing components into function-specific analyzers.
- FC2110 fraction collector
 - Designed molded parts for maximum functionality, ease of assembly, and minimum mold cost.
 - Determined operating philosophy and control panel layout.
- Econo System
 - Designed the layout and front panels of chromatography system components to work with the FC2110 fraction collector.
 - Prototyped a new peristaltic pump head and created an algorithm for mixing fluids without composition irregularities.

VARIAN INSTRUMENT GROUP Walnut Creek, CA Feb. 1981 – Aug. 1985
Manufacturer of gas and liquid chromatography systems

Mechanical Engineer

- Model 1095 Capillary On-Column Injector
 - Researched materials and fabrication processes in the design of a sample vaporization assembly.
- Model 8035 Autosampler
 - Designed the structure and mechanism for Varian's first stepper-motor driven autosampler.

HEWLETT-PACKARD BOISE DIVISION

Boise, ID

June 1980 – Nov. 1980

Manufacturer of computer printers

Development Engineer

- Model 2565 printer
 - Designed and prototyped a printbar-drive linear motor for a 600 line/minute lineprinter.

EDUCATION

BS Mechanical Engineering, University of Nebraska-Lincoln

PATENTS

Co-inventor on three biotechnology instrumentation patents:

- 4,862,932 Fraction collector
- 5,135,658 Method for reducing detector noise in a chromatography system
- 7,332,268 Layered support sheet for high-yield spot cutting from gels or membranes