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## **McPHERSON ENGINEERING ENTERPRISES, LLC**

Engineering consultant specializing in opto-mechanical engineering, manufacturing engineering, project engineering. Optical system design and manufacturing is my expertise and includes prior leadership experience. From home and on site consultation available.

### **TECHNICAL SKILLS**

- Full mechanical design capability utilizing SolidWorks 2015 (Certification SolidWorks 2008)
- Extensive design and fabrication experience in optical applications including electro-optic systems, Light analysis and delivery systems, optical mount design, optical assemblies, light delivery systems, component and system manufacturing, spectrometers, lasers, fibers, coatings, polishing and lapping, dicing, pressed molded optics, filters, and a wide variety of analysis equipment
- Utilize manufacturing concepts combined with company specific technologies to complete project designs considering manufacturability and cost
- Thorough documentation and software capability
- Fluent in a multitude of manufacturing processes utilized by design for manufactureability

### **EXPERIENCE**

**McPherson Engineering Enterprises LLC** – President, Engineering Consultant

[www.mcpheellc.com](http://www.mcpheellc.com) Orlando, FL, January 2015 – Present

Senior opto-mechanical engineer with focus on system design

- Opto-mechanical design, systems engineering, project engineering, and manufacturing engineering as directed by customer
- Optical system design utilizing commercially available optics and electro-optics as well as custom integrated
- Medical Laser System Design, Thulium Laser Surgery System for prostate surgery
- Petroleum analysis system, optical sensing system for color and Haze measurement
- Design and manufacture of a wide range spectroscopic system with range from 200nm to 1700nm with resolutions as small as 0.08 nm

**Ocean Optics** – Spectroscopy and sensing

[www.oceanoptics.com](http://www.oceanoptics.com) Winter Park, FL, Mar 2011 – Dec 2014, Apr 2008 – Oct 2009

Senior opto-mechanical engineer with focus on system design and product release

- Member of Custom Engineering Team to design custom solutions for unique spectroscopic applications including custom spectrometer design, system design, light delivery subsystems, and product enhancements in performance, manufacturability, and costs
- Opto-mechanical system design for absorbance, transmission, reflectance, RAMAN, and fluorescence utilizing the latest light delivery and sensing technologies to achieve new sensing capabilities
- Project engineer across several projects from inception through production release resulting in on time delivery to all customer requirements
- Direct impact on customer satisfaction through customer interface, technical support, and sales support in medical, defense, and a wide variety of customer applications
- Formal transfer to manufacturing and RMA support as required for new projects and legacy product lines including direct customer support to largest revenue OEM customers

### **LensAR** – Cataract laser surgery

[www.lensar.com](http://www.lensar.com) Oct 2009 – Mar 2011

Opto-mechanical design of cataract laser surgery machine

- With cross discipline engineering team, commercialized laser cataract eye surgery machine through continuous innovation while maintaining project timeline
- Optical train design including laser delivery subsystems, coaxial imaging subsystem, custom adjustable optical mounts, assembly and piece part design, tolerance analysis, and verification of requirements
- Engaged optical, software, manufacturing, process and electrical engineering groups for design, systems integration, and initial build and test
- Manufacturing interface for pass over from R&D to manufacturing including troubleshooting, tooling, and optimization of existing designs

### **L-3 Communications – ALST** – Laser range finders and designators

[www2.l-3com.com/alst](http://www2.l-3com.com/alst) Orlando, FL Jun 2006 to Apr 2008:

Manufacturing engineering supervisor for product and process optimization

- Managed the manufacturing engineering department to achieve maximum throughput and reliable / repeatable designs for eye safe laser range finders
- Key member of the Continuous Improvement Team with focus on design of product for manufacturability, vendor supply chain optimization, and reliability through thermal, shock, and vibration requirements
- Member of the Material Review Board

### **LightPath Technologies** – Press molded optics, collimators, custom glass, and filters

[www.lightpath.com](http://www.lightpath.com) Orlando, FL January 2005 to May 2006:

Opto-Mechanical Engineer for development and design of products and processes

- Lead engineer on product development team for aerospace collimator project
- Created a variety of optical measurement fixtures for interferometers, surface profilometer, CEM, collimators, and focal length measurement
- Aided in ISO 9000 certification

### **Microfabrica Inc.** – Micro mechanical devices

[www.microfabrica.com](http://www.microfabrica.com) Burbank, CA Oct 2001-Dec 2004

Production Manager/Engineer for manufacturing inception through volume production

- Managed production team for custom stereo lithography, electroplating, and planarization process creating micro mechanical devices in a clean-room environment
- Aided set up of facility and built manufacturing team then managed team over two shifts with responsibility for process optimization and all customer deliverables
- Assisted in development of design and manufacturing techniques through full analysis of process capabilities including SEM with spectroscopy, stress analysis, DPA, etc.

### **PRIOR EXPERIENCE**

Worked as a designer for customized head-mount and tabletop eye-imaging systems, cost reduction engineer for an ion implant system manufacturer, and as a machinist apprentice.

### **EDUCATION**

Wentworth Institute of Technology, Boston, MA

Bachelor of Science, Mechanical Engineering, August 1999

Solid Experts Training, Orlando Florida

Solid Works 2008, July 2008