

# Optical Fiber Systems, Inc

<http://opticalfibersystems.com>

**F. Durville**

**Founder and President**

# Why Optical Fiber Systems?

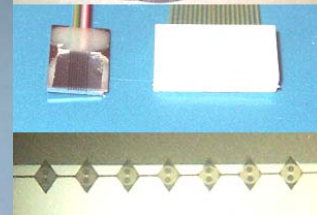
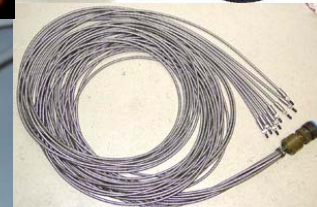
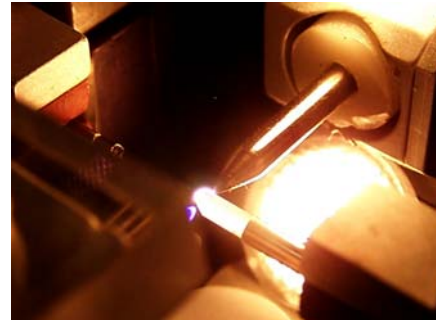
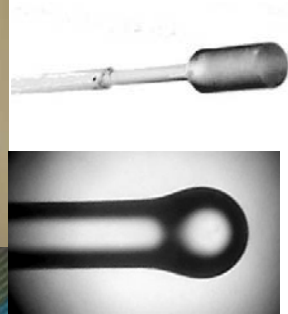
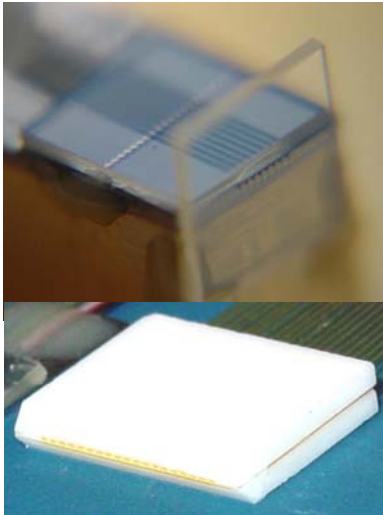
- Broad expertise (theory + practical)
  - Laser Physics, Material Sciences, Optics, Electronics and Mechanical Engineering
- Business experience
  - Founding and running new business
  - From product development to full production
- Expertise in fiberoptics, lasers and systems as well as in industrial and medical applications
  - Developed several industrial and medical laser systems
  - Work closely with customer to solve specific problem
- Easy and efficient interaction
  - Dynamic small company

# Company overview

- Founded May 2000
- Combines fiberoptic technology with Laser Diode Technology
- Develops, manufactures and markets custom fiber assemblies and laser systems
- Develops new laser technologies for DoD
- Dynamic, Small Business (currently 3 employees)

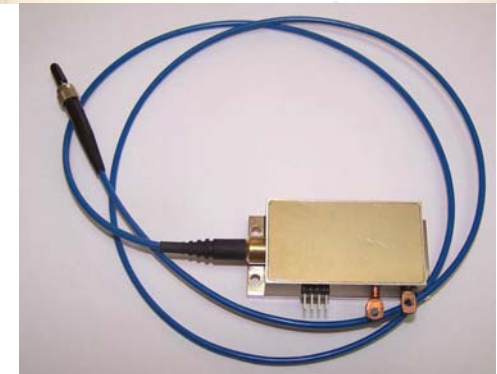
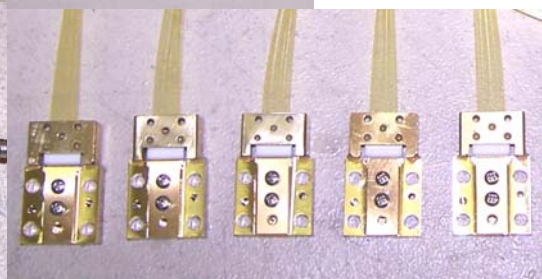
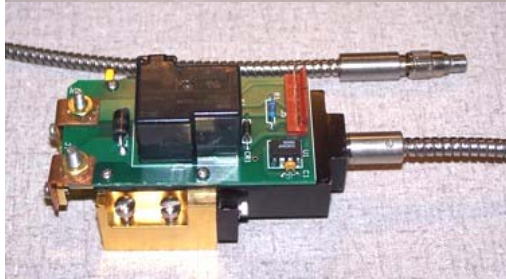
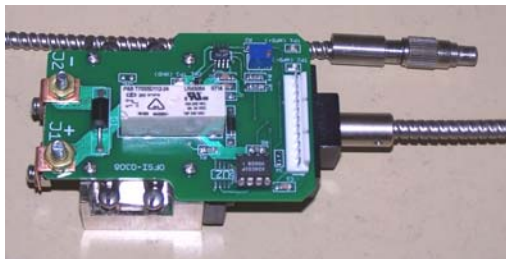
# OFSI Products

- Fiber arrays and assemblies
  - Linear array – 8 SMF on 250 $\mu$ m pitch w/ 340 $\mu$ m fl  $\mu$ lens
  - Compact hexagonal arrays – 19 MM 100 $\mu$ m w/ 60mm fl 3mm dia. lenses
  - 2D 5x5 collimated fiber array
  - Fiber cables and bundles
  - High Temperature resistance



# OFSI Products

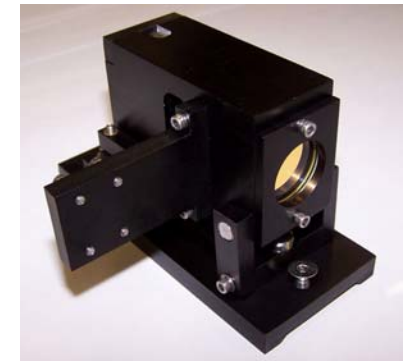
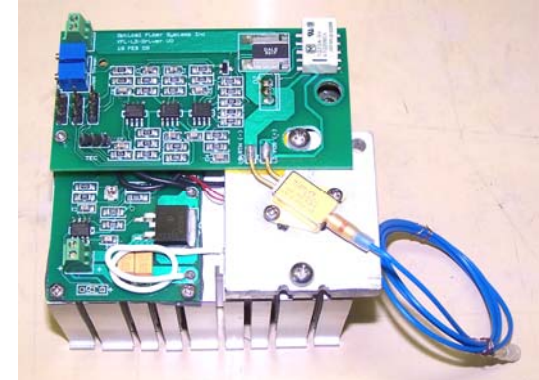
- Fiber-coupled laser diodes
  - 30W @ 808nm out of 1100 $\mu$ m-0.12NA
  - 150W @ 808nm out of 2.0mm-0.12NA
  - 8W @ 1060nm out of 600 $\mu$ m-0.12NA
  - 5mW @ 635nm out of SMF
  - 30mW @ 405nm out of SMF





# OFSI Products

- Laser Components
  - Fiber Collimators
  - Beam Expanders
  - Focusing, collimating, imaging lens assemblies
  - Laser Diode Drivers and controllers
  - Temperature Controllers
  - Laser "Engines"
  - USB Data Acquisition



# OFSI Products

- Laser Systems
  - Table-top, Rack-mount, Embedded, Hand-held
  - From 405nm to 1400nm, and 1mW to 300W
  - Single source or Multi-source
  - Standard or Custom



# OFSI Product Capabilities

- **Fiber assemblies**
  - Single mode or multimode, from 3 $\mu$ m to 1000 $\mu$ m core
  - Low power to high power (>100W)
  - Single fiber or multi-fibers (bundle)
  - Fiber arrays (linear, 2-D, un-collimated or collimated)
- **Laser components**
  - Fiber-coupled laser diode modules (1mw to 300W)
  - Drivers and controllers
  - Collimating, focusing and imaging optics modules
- **Laser systems**
  - Table-top, rack-mount, hand-held, OEM
  - Single or multiple



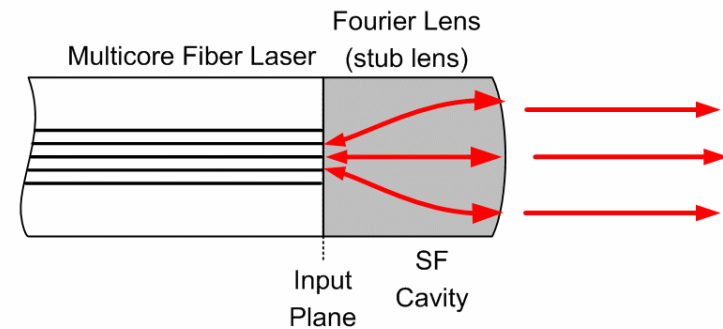
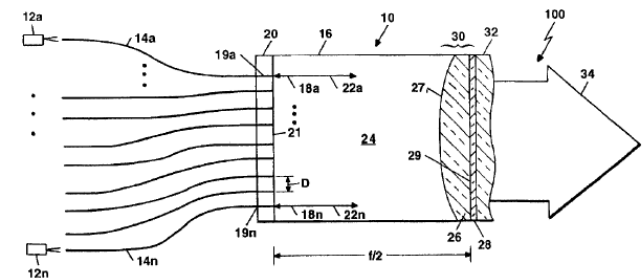
# OFSI Engineering / R&D

## From Concept design to Production

- Fiberoptics assemblies (arrays, bundles, splicing)
- Optical design (SOLSTIS, OSLO, MathCAD)
  - Refractive optics, imaging modules, beam propagation, diffraction
- Mechanical design (AutoCAD)
  - Laser resonators, LD fiber-coupling modules, fiber bundles
  - Opto-mechanical assy
- Electronic design (OrCAD)
  - LD drivers, control circuits, programmable PIC
  - Sensing, detection
- Advanced technologies: fiber lasers, coherent combination, high brightness LD

# OFSI R&D Technology

- Unique Patented Self-Fourier Technology (Collaboration with Corcoran Engineering)
- High Power Fiber & Diode Lasers
- Coherent Combination
- DoD-sponsored programs



# OFSI Facilities

- Fiberoptics assemblies
  - Polishing, splicing
- Lasers Diodes
  - Fiber-coupling, testing
- Laser Systems
- Laser modules & components
- Optical assemblies



# Professional Experience

- Involved in research and development of lasers and fiberoptics for more than 30 years.
- Author of more than 30 publications and presentations.
- Holds four patents on lasers and laser applications.
- Past work includes
  - Study of non-linear effects in glass materials
  - Development of medical laser applications
  - Imaging through turbid media
  - Development of laser diode fiber-coupling techniques
  - Coherent combination of fiber lasers and laser diodes.
- Dr. Durville was selected by Air Force Research Lab to be a member of a panel of experts during the 2000 SSDLTR conference in Albuquerque, NM.

# Past experience – highlights

- Developed (design to production) commercial laser systems
  - 500W Nd-YAG for metal welding and cutting.
  - 100W QS Nd-YAG for marking
  - 10W pulsed Nd-YAG for jewelry welding
  - Q-Switched Alexandrite laser for Tattoo removal.
  - 50W diode for Prostate treatment (BPH)
- Developed and set-up micro-machining Excimer laser system to fabricate DOE diffractive microlenses.
- Involved in research and development of laser technologies with US Department of Defense for over 15 years.
  - Hand-held diode laser for internal bleeding hemostasis
  - High-power high-brightness fiber-coupled diode
  - Coherent beam combination of fiber laser and laser diodes