



# Coherent Specialty Fibers

## An Overview

Tuesday, July 7, 2020

# Specialty Fiber Product Families

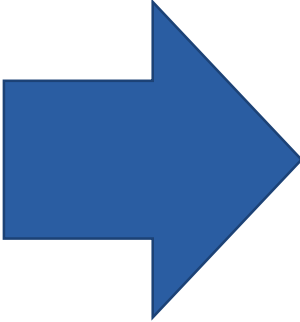


## 7 Product Families:

- Single Mode Fibers
- Multimode Fibers
- PM Fibers
- Gyro Fibers
- Double Clad Fibers
- Geophysical Fibers
- Medical Fibers

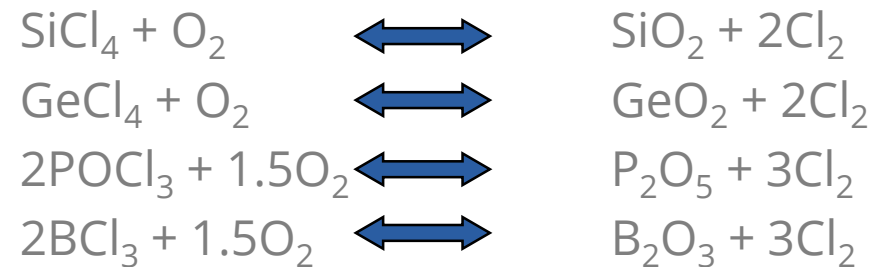
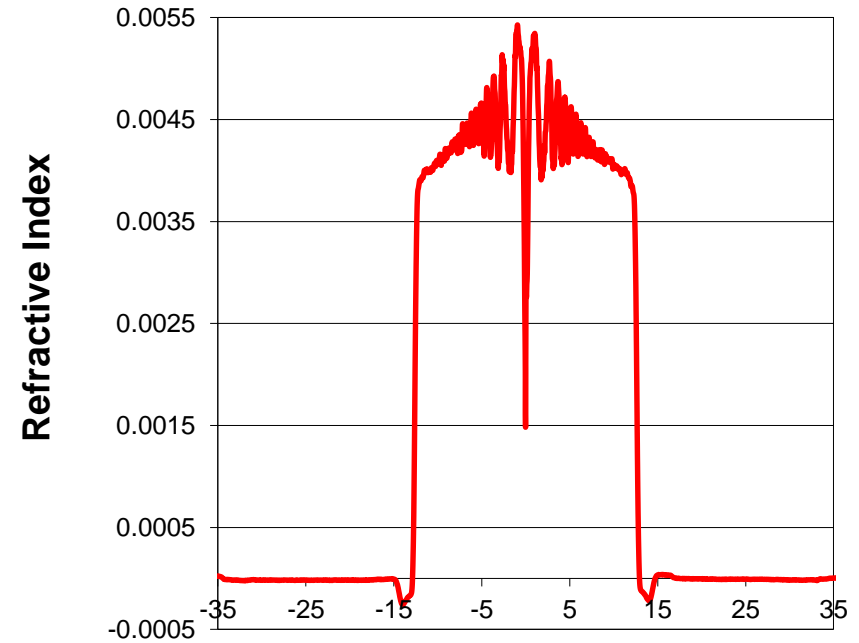
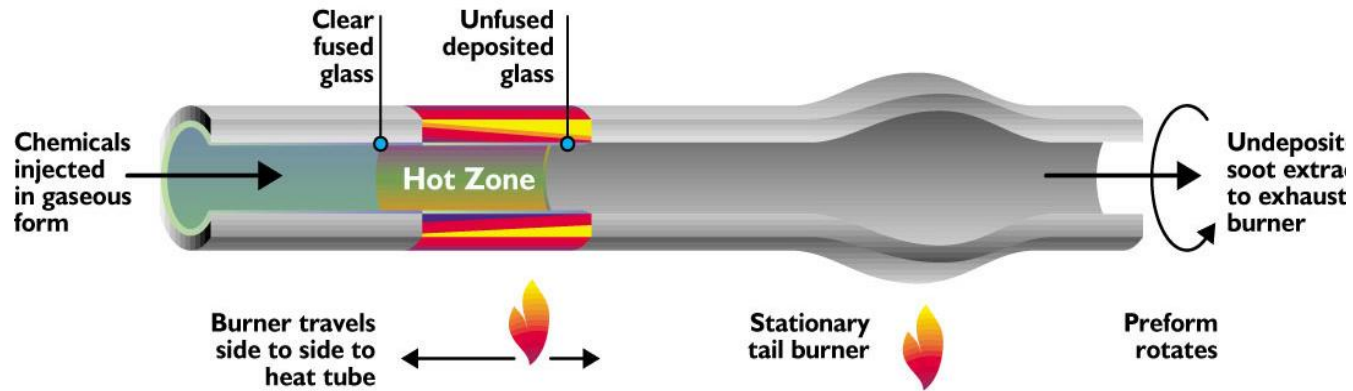
Markets Served: Industrial Lasers, Telecom, Scientific, Defense, Oil & Gas, Medical and Sensing

# Diverse portfolio of products & applications served

- Single mode, Multimode, **LMA**, **XLMA**, Photosensitive, Select-Cutoff, Telecom, **UHNA**
  - Single or Multi Clad
  - Several geometries (Core/Clad/NA)
  - **Polarization** maintaining
  - Doped Fibers: **Yb**, **Tm**, **Er/Yb** and others
  - **Radiation** Resistant
  - Coatings: Low/High Index, High temperature acrylates, Carbon-Polyimide, Silicone, Tefzel
  - **Flat Top** Fibers
- 
- Sensing
  - Medical
  - Optical Gyroscope
  - Radiation Environment
  - Fiber Laser & Amplifiers CW/Pulsed/Ultrafast
  - High Power Laser Beam Delivery
  - Telecom
  - Defense

Please check out our powerful product selector tool at [www.nufern.com](http://www.nufern.com)

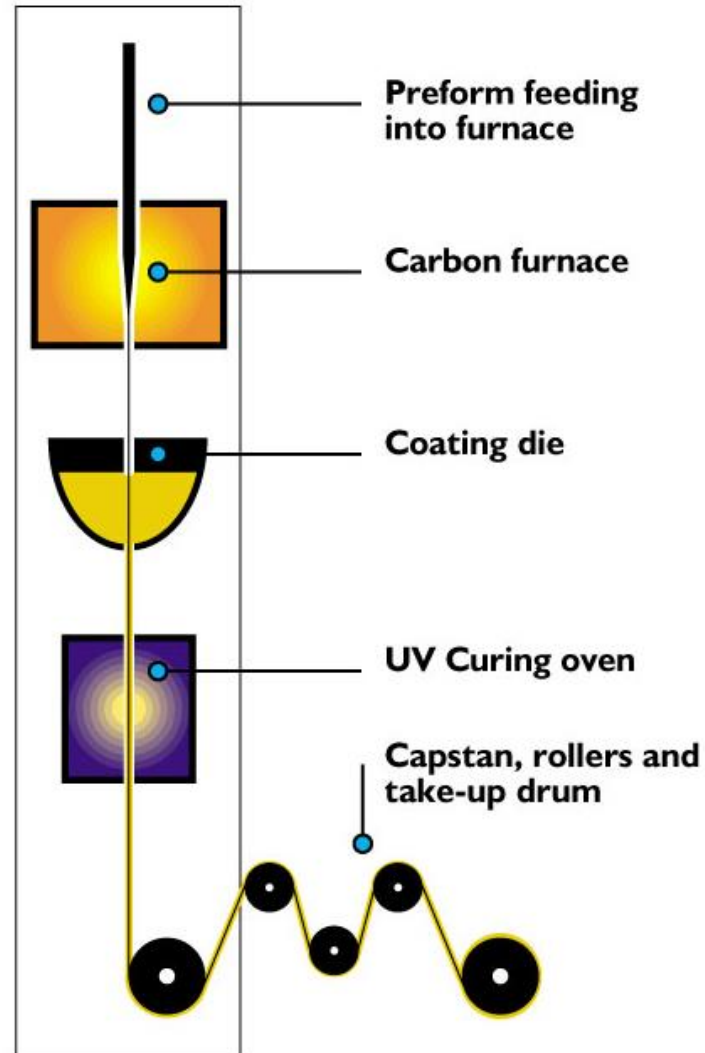
# Glass Making With MCVD



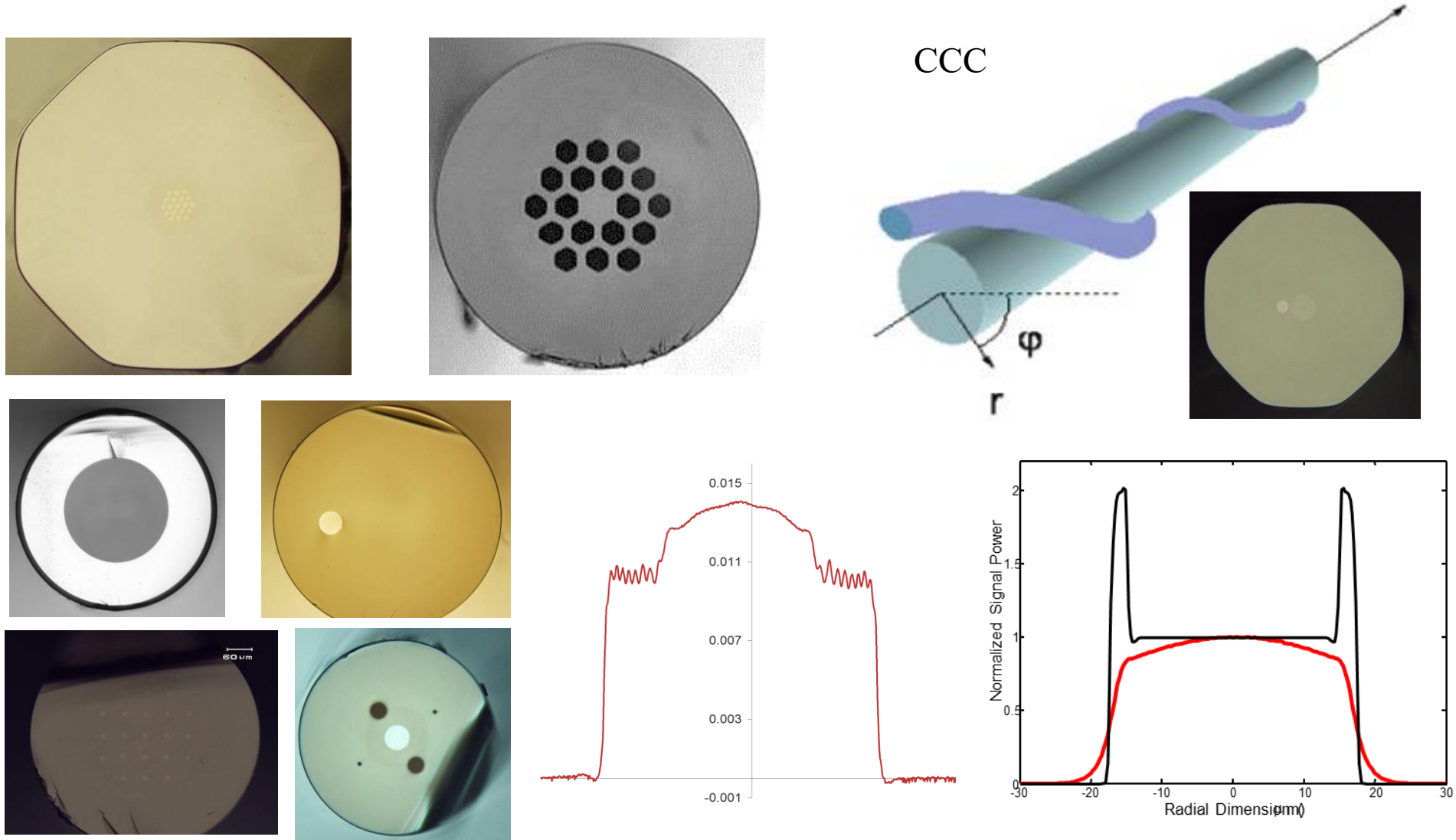
Seven lathes operating 2 shifts a day

# Drawing Fiber From a Preform

- Fibers, Canes and Capillaries
- 4 Towers online
- UV Cured Coatings
- Thermal Coatings
- Tefzel buffering
- < 60 mm preforms
- Draw of Complex Assemblies
- Preform Spinning



# Custom Fiber Design and Fabrication

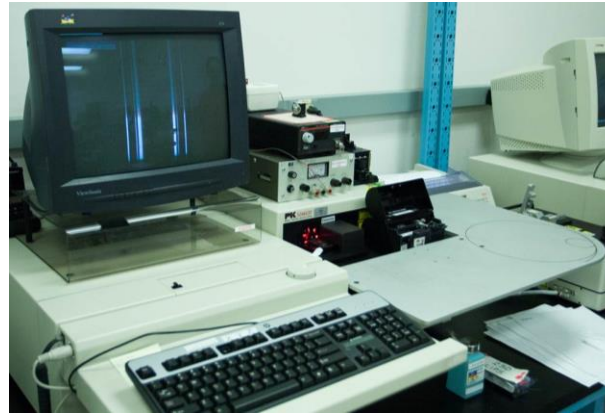


# Measurement Capabilities Unique to Specialty Fibers

Spectral: 400 – 2100 nm



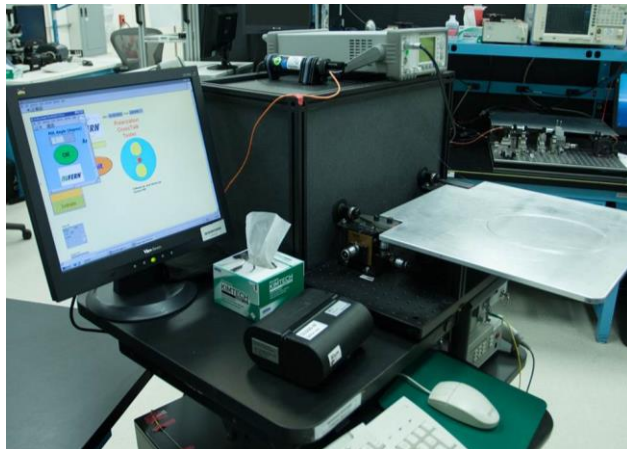
Geometries: Round/Shaped



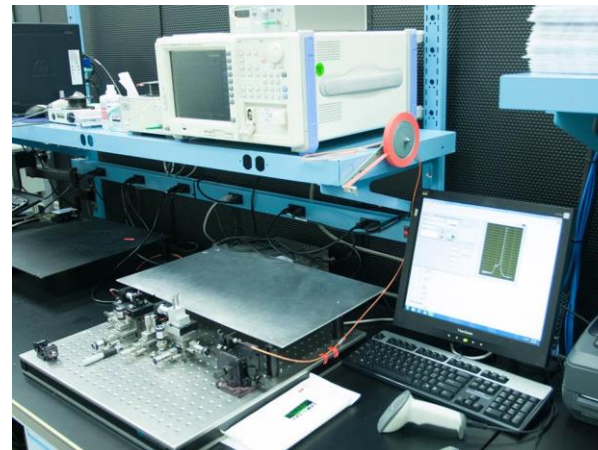
Dispersion & Birefringence



Polarization X-talk: Visible-IR



Rare Earth Absorption



Telcordia Lab: GR-20





# Coherent Specialty Fibers

## New Products

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# PREVIEW – Power Scaling of CW Fiber Lasers

## New Double Clad Yb doped fiber offerings

- Power scaling beyond 2kW enabled
- Maintain current fiber laser architecture
- SRS and TMI mitigation
- Optimized for pump wavelengths
- Significantly reduced photodarkening (to the detection limit!)
- Cost effective solution for fiber lasers

Gain Fiber	Matched Passive fiber
LMA-YDF-22/400-915-2kW	LMA-GDF-22/400-915-2kW
LMA-YDF-20/400-976-2kW	LMA-GDF-20/400-976-2kW

## New Triple Clad Yb doped fiber offerings

- Power scaling beyond 4kW enabled
- Matched passive and beam delivery fibers

Gain Fiber	Matched Passive fiber
LMA-YTF-34/460/530	LMA-GTF-34/460/530
	LMA-GDF-34/530

# PREVIEW – Power scaling ultrafast fiber lasers

- New DC fiber designs for power scaling of ultrafast fiber lasers offering:
  - Reduced non-linearities
  - Highest absorption (> 15%)
  - Lowest Photodarkening
  - High beam quality

Gain Fiber	Matched Passive fiber
PLMA-YDF-14/125-UF	PLMA-GDF-14/125-UF
PLMA-YDF-25/250-UF	PLMA-GDF-25/250-UF
PLMA-YDF-30/250-UF	PLMA-GDF-30/250-UF

- Designed to achieve high peak powers while ensuring high reliability