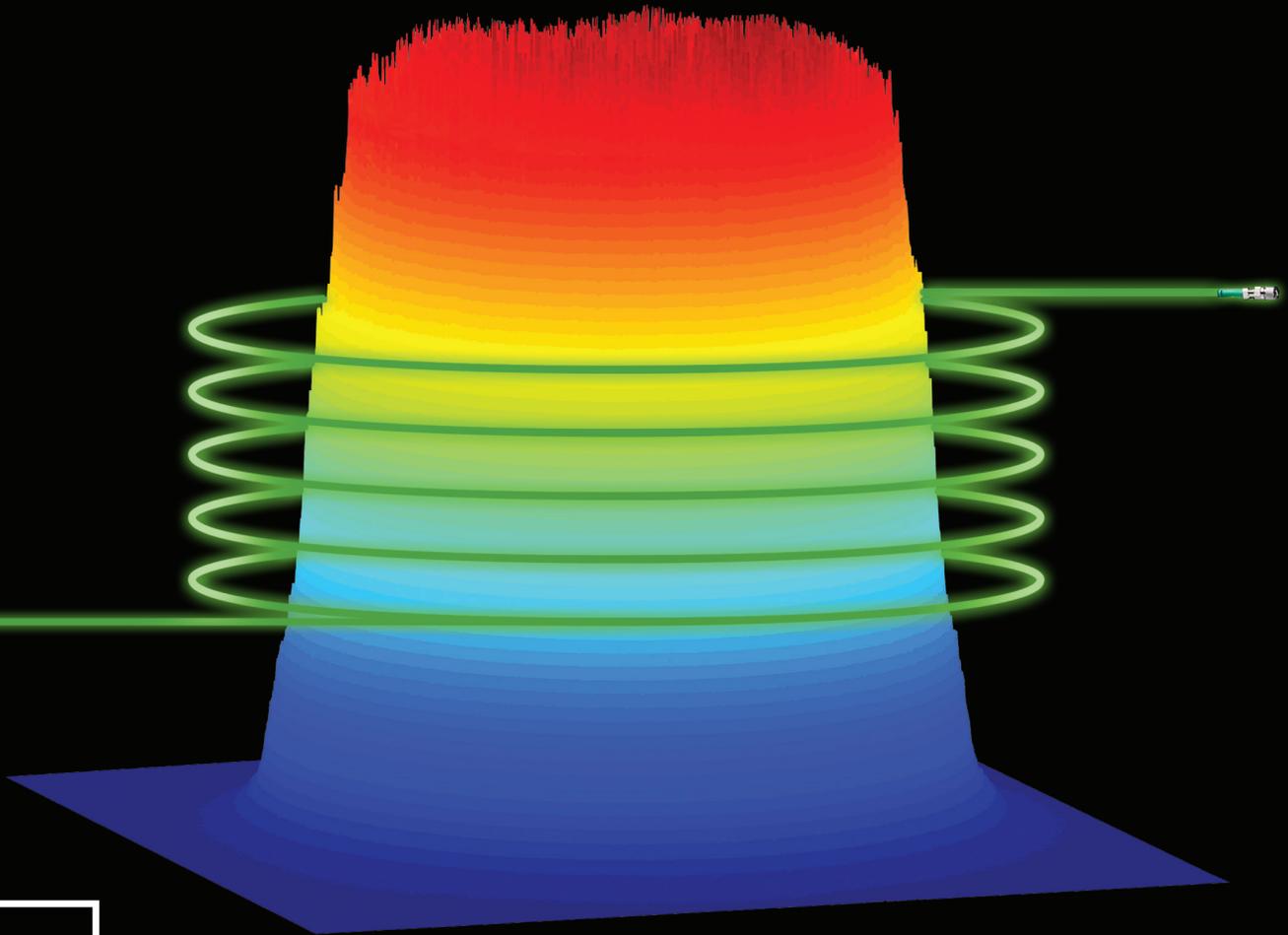


# **NU**BEAM *Flat-Top*<sup>™</sup>



## Controlling Beam Stability and Uniformity

### Beam Delivery Fibers for Generating Flat-Top Beam Output

NuBEAM Flat-Top fibers are specially designed to scramble the mode content propagating in its core, tailoring the mode power distribution to achieve flat-top beams. In addition, these fibers have been carefully engineered to allow precise control of the output beam parameter product (BPP) or beam divergence. Nufern's flat-top beam delivery fibers offer unique performance attributes to efficiently convert Single-Mode (SM) and Multi-Mode (MM) beams into flat-top beam profiles. NuBEAM Flat-Top fibers are perfectly suited to be easily and efficiently integrated with existing fiber and free-space based optical systems and are designed to handle multi-kilowatt power levels. These unique fibers offer the highest level of performances for laser, amplifier and light delivery systems requiring either flat-top and homogeneous beams, mode mixing or BPP enhancement.





### Optical Attributes

- Beam Transformation — From Gaussian to Flat-Top beam profile
- Mode conversion — Achieve targeted BPP
- Multimode beam homogenization — Reduction of hot spots
- Efficient brightness conservation of multimode beams
- Suitable for Multi-kW beam delivery

### Features & Benefits

- All-in-fiber solution — Simple system integration with conventional splicing/connector techniques
- Beam delivery cable format — Compatible with industry standards
- Pure silica core — Low attenuation over a wide spectral range from UV-VIS to NIR
- All fiber proof tested to > 100 kpsi — Critical for ensuring long term reliability
- Scalable design — Can be optimized to achieve specific customer requests

### Mechanical Attributes

- Robust design — Compatible with majority of fiber interconnect systems
- Clean room processing — Provides high-strength and long-life
- Core diameters ranging from 50  $\mu\text{m}$  to 600  $\mu\text{m}$  — Covers low to high power applications

### Applications

- Beam delivery for high power fiber, solid-state or direct diode lasers
- Material processing applications requiring Flat-Top beams
- Uniform illumination for imaging and spectroscopy
- All-Fiber solution for mechanical mode scramblers used for medical applications
- Homogeneous tissue exposure for laser-assisted surgery

